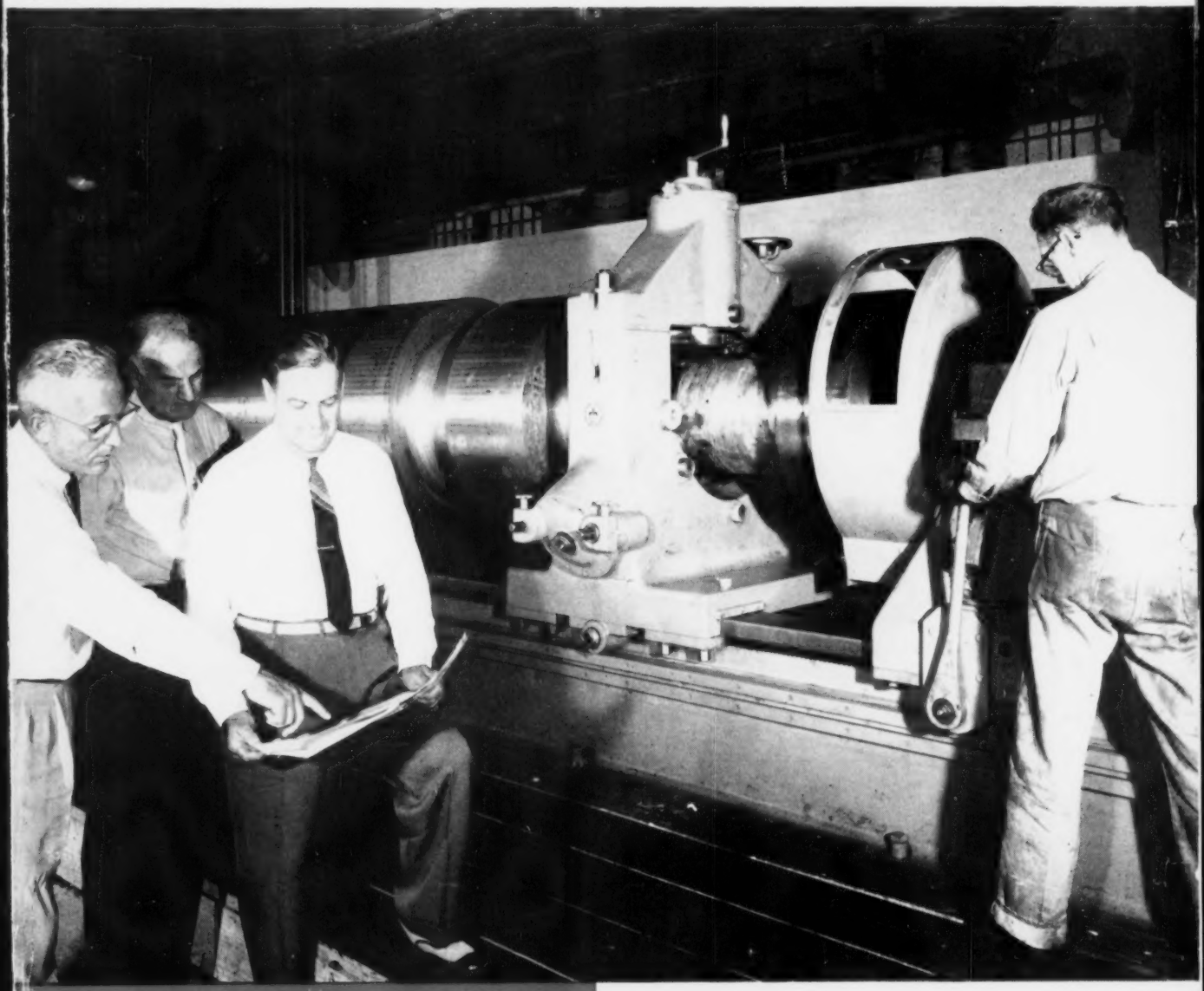
The IRON AGE

August 15, 1957 A Chilton Publication The National Metalworking Weekly

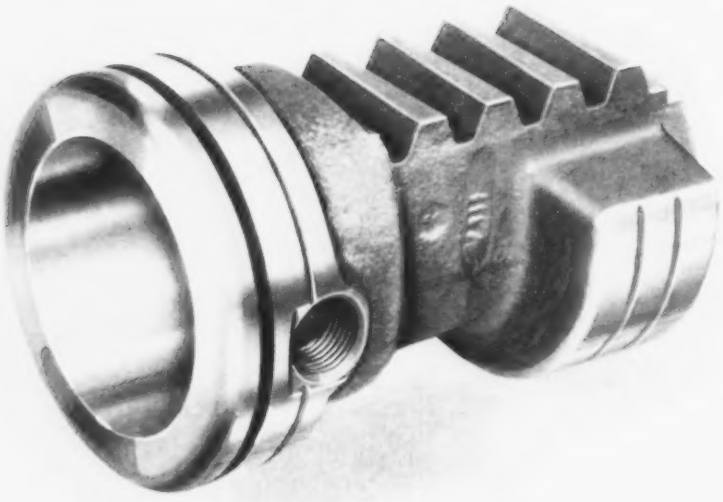


Trepanning: Faster Holes With Fewer Chips P. 91

Are We Heading Into a Nickel Surplus? – P. 51

Tool And Die Shops Scramble For Business – P. 144

Digest of the Week P. 2-3



TOOL LIFE SOARED FROM 25 TO 750 PIECES

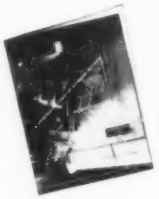
WITH ARISTOLOY LEADED

Counterboring 8 lb. forging was costly for large steering gear manufacturer

Excessive tool breakage was running into hundreds of dollars per month for a large automobile parts manufacturer. On 2.17" ID counterboring operation of this forging made from A.I.S.I. 5120, chips were long and continuous. They wrapped around the tool, fouling it and causing premature tool failure. Tool life averaged only 25 pieces per tool.

A change to Leaded Aristoloy 5117 brought about an immediate improvement not only in tool life but in increased production and vastly improved finish. Tool life was upped to 750 pieces per tool. Spindle speed was increased from 113 to 239 R.P.M. and feed from .007 to .0134 I.P.R.

If you have a problem involving counterboring or deep hole drilling, call your nearest Copperweld district office. We will be glad to have a field metallurgist, experienced in application of lead treated steels, work with you.



JUST OFF THE PRESS

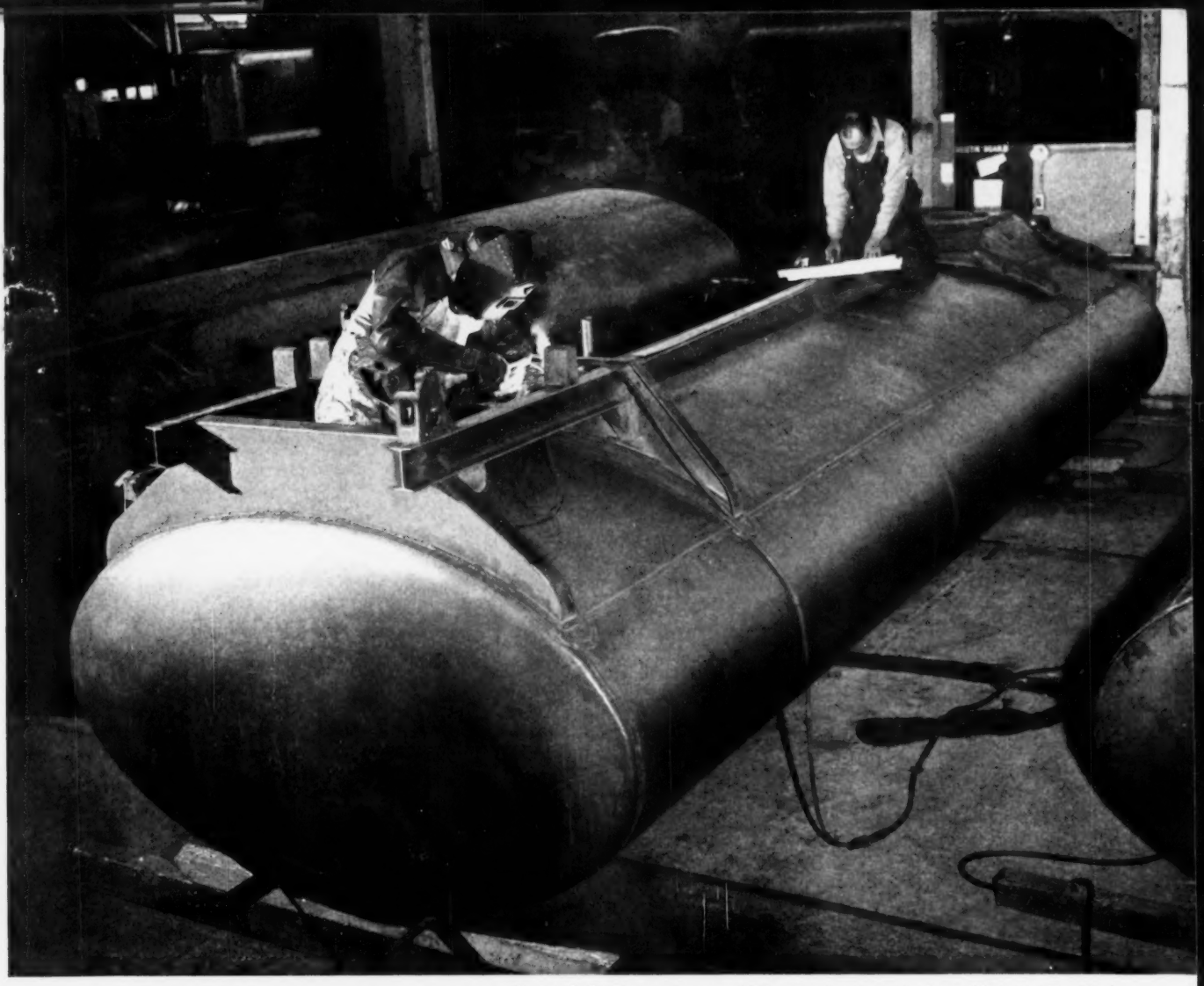
New Leaded Steel Catalog
Write for your copy today.

ARISTOLOY STEELS

COPPERWELD STEEL COMPANY • Steel Division

4001 Mahoning Avenue • WARREN, OHIO

EXPORT: Copperweld Steel International Co., 225 Broadway, New York 7, N.Y.



Putting the finishing touches on a 4600-gal tank trailer in the shops of Industrial Steel Tank and Body Works, Berkeley, California. Tank was welded from 12-ga Mayari R sheets.

They use 12-ga Mayari R sheets in place of 10-ga carbon steel

This tank trailer, being assembled in the shops of Industrial Steel Tank and Body Works, Berkeley, California, is a hot-oil carrier to be used in road construction jobs. Formerly made of 10-ga carbon steel sheets, the tanks are now welded from 12-ga Mayari R high-strength, low-alloy steel sheets with substantial savings in deadweight.

"We have wide acceptance of our hot oil tanks made of 12-ga Mayari R," say the Industrial Tank people, adding: "In working with Mayari R there are no welding problems. It is easy to work with and it is a good, tough piece of material for the job, with terrific savings because of the lighter-weight sheet we can use."

More and more manufacturers of tankers like this, as well as buses, walk-in panels, dump trucks and flat-beds are turning to Mayari R. Shop men find they can weld, work and form Mayari R without special equipment or techniques. Owners like the fact that Mayari R holds paint much longer than carbon steel, and resists atmospheric corrosion 5 to 6 times better.

If your product is one which might benefit from the superior properties of Mayari R sheets, a Bethlehem representative will be glad to discuss it with you. You can reach him through the nearest Bethlehem district sales office.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation
Export Distributor: Bethlehem Steel Export Corporation

Mayari R...High-Strength, Corrosion-Resisting Steel

BETHLEHEM STEEL

THE IRON AGE
Chestnut and 56th Sts.
Philadelphia 39, Pa.
SHerwood 8-2000

GEORGE T. HOOK, Publisher

EDITORIAL STAFF

TOM C. CAMPBELL, Editor-in-Chief
GEORGE F. SULLIVAN, Editor

Managing Editor E. C. Beaudet
News-Markets Editor J. B. Delaney
Asst. News Mkts. Ed. R. D. Raddant
Technical Editor J. J. Obrzut
Machinery Editor E. J. Egan, Jr.
Metallurgical Editor P. M. Unterweiser
Materials Editor Wm. Czygan
Art Director J. A. Degen

Associate Editors: F. J. Starin, P. J. Cathey, R. Schulin, F. P. Plimpton, Assistant Editor: J. A. Moore. Regional Editors: K. W. Bennett, Chicago; T. M. Rohan, Cleveland; H. R. Neal, Detroit; G. G. Carr, New York; R. R. Kay, Los Angeles; G. J. McManus, Pittsburgh; G. H. Baker, R. M. Stroupe, N. R. Regeimbal, Washington. Correspondents: F. L. Allen, Birmingham; N. Levenson, Boston; R. M. Edmonds, St. Louis; J. Miller, San Francisco; R. Kazarian, Buffalo; D. A. Couhlin, Seattle; F. Sanderson, Toronto; F. H. Harley, London, England; Chilton Editorial Board; Paul Wooton, Washington representative.

WASHINGTON EDITORIAL OFFICE
Washington 4 National Press Bldg.

BUSINESS STAFF

Production Manager Warren Owens
Director of Research Oliver Johnson
Circulation Mgr. W. M. Coffey
Promotion Manager Richard Gibson
Asst. Research Dir. Wm. Laimbeer

REGIONAL BUSINESS MANAGERS

Chicago 1 T. H. Barry, W. R. Pankow
360 N. Michigan Ave. Randolph 6-2166
Cleveland 15 Robert W. Watts
930 B. F. Keith Bldg. Superior 1-2860
Columbus 15, Ohio Harry G. Mumm
LeVegue-Lincoln Tower Capital 1-3764
Detroit 2 W. J. Mulder
103 Pallister Ave. Trinity 1-3120
Los Angeles 28 R. Raymond Kay
2420 Cheremoya Ave. Holly'd 3-1882
New York 17 C. H. Ober, C. T. Post, I. E. Hand, 100 E. 42nd St. Oxf'd 7-3400
Philadelphia, B. L. Herman, J. A. Crites
56th & Chestnut Sts. Sherwood 8-2000
Pittsburgh 22 T. M. Fallon
1502 Park Bldg. Atlantic 1-1832
San Francisco 3 Don May
1355 Market St. Underhill 1-9737
Tulsa H. E. Mott, J. W. Sangston
621 Petroleum Bldg. Luther 4-1769
W. Hartford 7 Paul Bachman
62 LaSalle Rd. Adams 2-0486
England Harry Becker
15 Gratton St., Altrincham, Cheshire.

One of the Publications Owned and Published by Chilton Company, Chestnut & 56th Sts., Philadelphia 39, Pa.

OFFICERS AND DIRECTORS

Joseph S. Hildreth, Ch. of the Board
G. C. Buzby, President

Vice-Presidents: P. M. Fahrendorf, Harry V. Duffy, George T. Hook, Robert E. McKenna, Leonard V. Rowlands; Treasurer, William H. Vallar; Secretary, John Blair Moffett; Directors: Maurice E. Cox, Frank P. Tighe, Everit B. Terhune, Jr., Russell W. Case, Jr., John C. Hildreth, Jr.—Comptroller, Stanley Appleby.

Indexed in the Industrial Arts Index and the Engineering Index.

EPA NBP

Copyright 1957 by Chilton Company

THE IRON AGE, published every Thursday by CHILTON COMPANY, Chestnut & 56th Sts., Philadelphia 39, Pa. Entered as second class matter, Nov. 8, 1932, at the Post Office at Philadelphia under the Act of March 3, 1879. Price to the metal working industries only or to people actively engaged therein, $5 for 1 year, $8 for 2 years in the United States, its territories and Canada. All others $15 for 1 year; other Western Hemisphere countries, $15; other Foreign Countries, $25 per year. Single Copies 50c. Annual Review Issue $2.00. Cable: "Ironage," N. Y.

The IRON AGE

August 15, 1957—Vol. 180, No. 7

Digest of the Week in

★Starred items are digested at right.

EDITORIAL

Our Defense Problem: Is It Survival Or Fiscal? 7

NEWS OF INDUSTRY

★**Special Report:** Nickel Famine End Is In Sight 51
★Steel Industry Wins First Round 54
★Critics Rip Into Trade Schools 57
★Construction Equipment: Builders Hope Worst Is Over 58
★A Rising Barometer: Coated Steel 59
★Zinc Outlook Takes A Good Turn 60
The Iron Age Salutes 65
Men in Metalworking 81

NEWS ANALYSIS

Newsfront 49
Report to Management 67
★Automotive 68
★Washington 73
West Coast 75
★Machine Tools 77

FEATURE ARTICLES

★Trepanning: Faster Holes With Fewer Chips 91
★Vacuum Lift Speeds Sheet Handling 94
★Scrubber Controls Scrapyard Smoke 96
★Mold Treatment for Better Castings 98
★Does Lead Improve Cast Steel? 102
★Soldering: An Automation Problem 104
High Speed Drilling Ups Production 106

MARKETS & PRICES

★**The Iron Age Summary** 143
Purchasing 144
Steel Products Markets 146
Iron and Steel Scrap Markets 148
Nonferrous Markets 152
Steel Prices 155
Clearing House 164

REGULAR DEPARTMENTS

Fatigue Cracks 11
Exhibits, Meetings 13
Free Literature 108
Technical Briefs 116
New Equipment 134

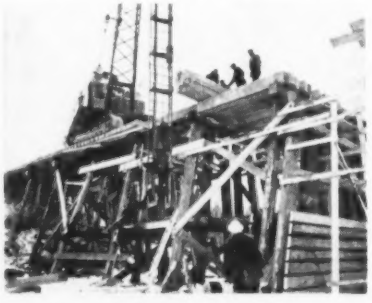
INDEX TO ADVERTISERS

172

NEWS ARTICLES

NICKEL SURPLUS?

Good Chance by '61—A year ago you could have gotten long



odds, but now it looks like there will be a light oversupply of nickel by 1961. There are a lot of good reasons, including 150 million more lb from major expansions. P. 51

STEEL HEARINGS

Blough Takes Offensive—As the Senate hearings on steel pricing policies got under way, U. S. Steel's Roger Blough came out fighting. He refused to be boxed in by Sen. Kefauver's questions. P. 54

METALS TRAINING

Teachers Get Brickbats—Industry, labor and government critics took off on metal trades training teachers during recent vocational convention. Among the advice: Modernize, teach students more than a trade, get out in the field more often. P. 57

ATOMIC POWER

Who Will Develop It?—A majority of the House-Senate Atomic

Metalworking

FASTER BORING: Not only is trepanning faster, but it creates a solid metal core instead of a pile of chips. The trepanning bar turns at high speed with negligible run-out. Here, Midvale-Heppenstall officials (for their names see Fatigue Cracks, P. 11) discuss the new method. P. 91

Energy Committee favors federal development of commercial power. But a vigorous Republican minority wants less government participation. Legislation is pending. P. 73

NEW CAR QUALITY

Is It Slipping?—Rate of complaints from new car buyers has jumped sharply this year. Automakers trace much of the difficulty to the human element on the assembly lines. Materials and engineering, they say, are better than ever. P. 68

FEATURE ARTICLES

VACUUM LIFT

For Handling Sheets—A vacuum hoist and a trapdoor unloader automatically handle large steel sheets on a turret punch press. There's no longer any need for two men to handle the job. The press operator can easily control the short, 30-second loading cycle. P. 94

SMOKE CONTROL

At Scrap Refinery—A water scrubber smoke control unit handles a tough situation as an everyday low cost routine. The key is in the turbulence to which the smoke laden gases are subjected. Unit handles smoke from burning oil-soaked scrap. P. 96

KEY TO QUALITY CASTINGS

Mold Treatment—What you do to the mold after it's made and prior to pouring can be vital to casting quality. Drying is an important aspect. P. 98

LEAD IN CAST STEEL

To Improve Machinability—The addition of small amounts of lead to liquid steel is becoming accepted as a method for getting higher strength without sacrificing machining economy. Machining tests on leaded steel show impressive reductions in machining time. P. 102

AUTOMATIC SOLDERING

How To Handle Problems—In shifting from hand soldering, which involves a second or two, the dip period in an automatic setup may extend to 30 seconds or more. The problems come in the temperature effects on critical parts. P. 104

MARKETS & PRICES

CONSTRUCTION EQUIPMENT

Worst Is Over—Recent poor manufacturing rates for heavy construction equipment may be misleading. Improved retail sales are beginning to break through inventory glut. P. 58

ZINC CONSUMPTION

High Rate Continues—In spite of the gloomy short-term picture being painted by some producers, the long-range trend of zinc consumption is climbing. Current sluggish market can be attributed in part to over-production. P. 60

ALUMINIZED STEEL

A Rising Barometer—Industry's sole producer of aluminized steel is getting rushed for orders. It indicates a similar upsurge is near for other flat-rolled products. Automotive and appliances are leading the rush. P. 59

GERMAN TOOL SALES

Slipping, But Still Strong—Although West German machine tool output this year will probably top the 1956 level, there are signs production and sales are beginning to slow down. P. 77

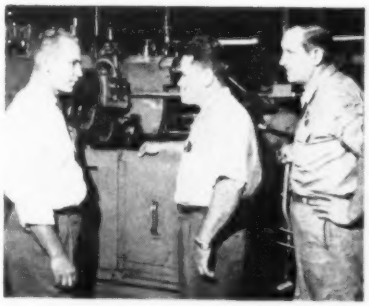
STEEL BUILDUP

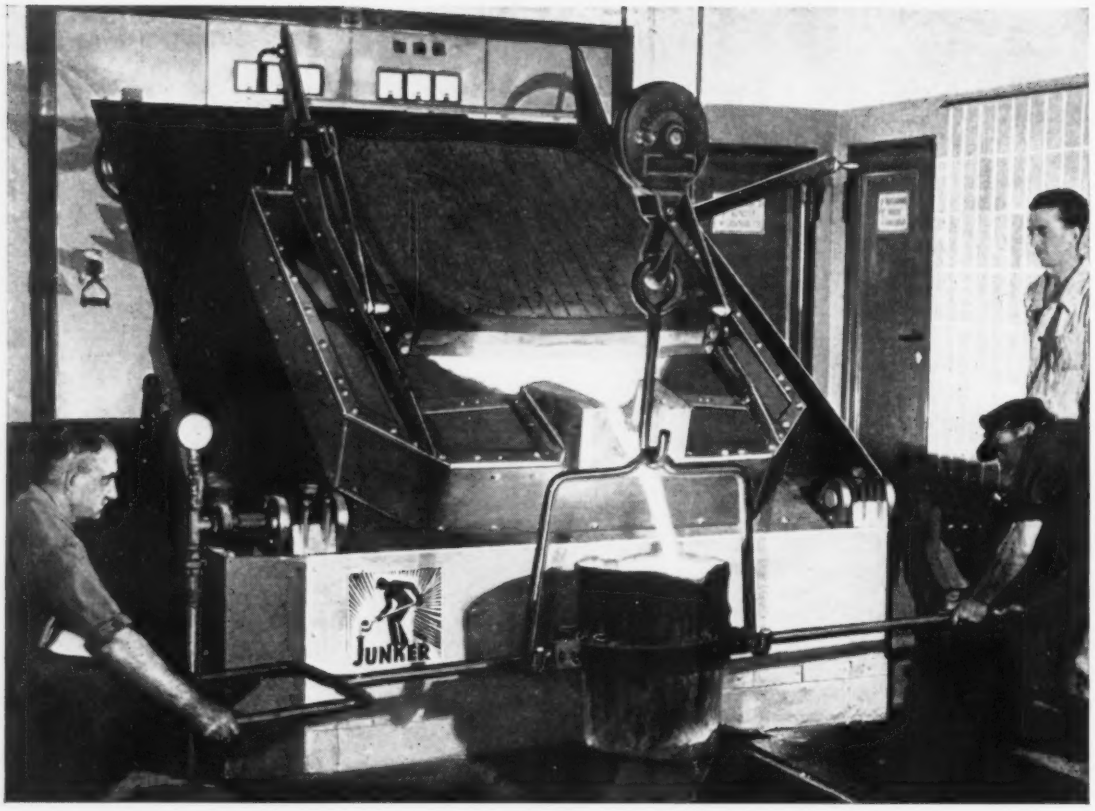
You Can Sense It—The gathering strength of the market is more of a "feel" than an actuality. You must look behind the scenes to learn why overall demand will catch fire in the near future. P. 143

NEXT WEEK

TOOL TROUBLE SHOOTING

For Fast Action—Chrysler's tool trouble man John Danko, center, talks things over with Service Coordinator James Unis, left, and Toolmaker John Dudas. In Next Week's feature, they show where a good tool trouble man is vital.





A NEW METALLURGICAL TOOL FOR THE PRODUCTION OF HIGH QUALITY CAST IRON

We offer to the American industry the AJAX-JUNKER 60 cycle coreless induction furnace for melting or superheating cast iron, and particularly for the production of ductile cast iron. The AJAX-JUNKER is economical in foundries with intermittent operation and frequent alloy changes. It melts loose turnings with high recovery.

Electromagnetic stirring of the melt enables close control of composition. It speeds up the recarburizing rate and the solution of alloy ingredients.

High temperatures required for many quality castings are easily attained. Uniform heat is generated within the melt and the furnace lining is at a lower temperature.

The photograph shows a 6-ton Junker coreless induction furnace in a German foundry.

May we explore the possibilities of this new method with you?

AJAX USA

60 CYCLE INDUCTION MELTING

ENGINEERING CORPORATION

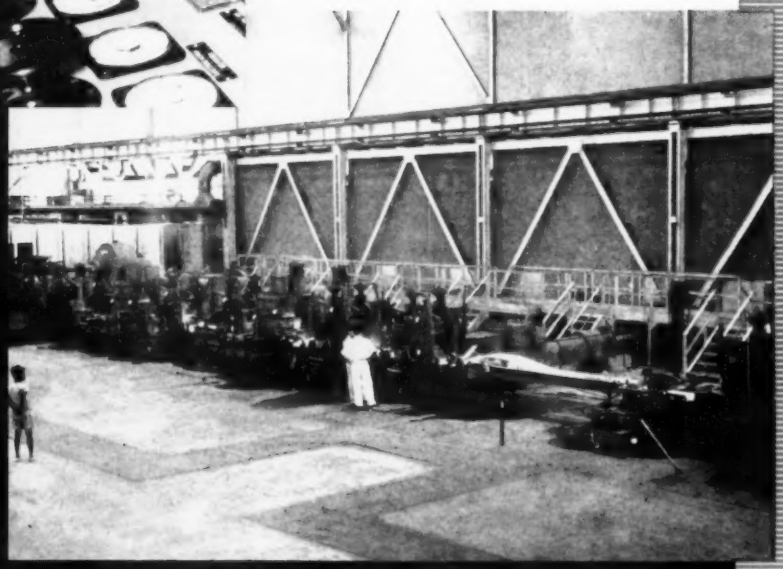
TRENTON 7, NEW JERSEY

Associated Companies: Ajax Electrothermic Corporation Ajax Electric Company

MORGAN MILLS
at work in India

14" SKELP MILL

Tata Iron and Steel Co., Ltd.
JAMSHEDPUR, INDIA



Since 1917 Morgan Construction Company has been contributing skilled engineering talent and precision built continuous rolling mills to the national growth of India. The mill illustrated here is a 14" skelp mill recently installed for the Tata Iron and Steel Company at Jamshedpur.

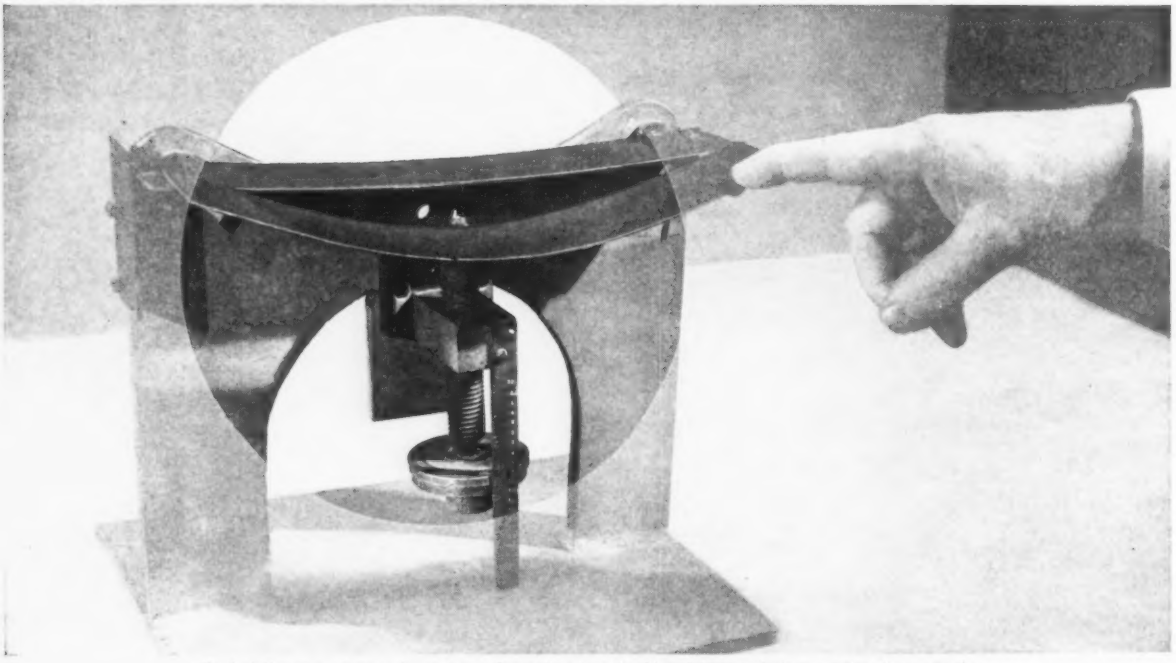
This modern skelp mill is just one example of two-hundred and twenty-one Morgan Rolling Mills that have been designed, built and installed in plants all over the world.

MORGAN
WORCESTER

MORGAN CONSTRUCTION CO., Worcester, Massachusetts

Rolling Mills • Morgoil Bearings • Wire Mills • Regenerative Furnace Control • Ejectors • Gas Producers RM 75

How Armco Enameling Iron Helps Parts Hold Tolerances ...assures tight porcelain enamel-to-metal bond



Fired at the same temperature: Armco Enameling Iron (back) resists sag; Plain steel (front) sags badly.

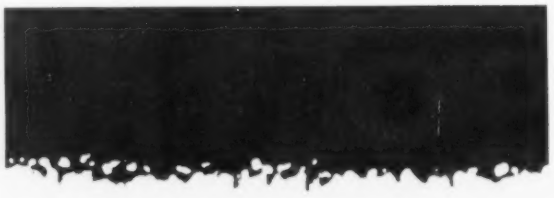
Armco Enameling Iron stubbornly withstands sag and distortion at all porcelain enamel firing temperatures. Dimensions stay accurate. Porcelain enameled parts fit. Rejects are practically eliminated.

But that's not the whole story about this special enameling iron. Product parts also have a tighter, more durable, enamel-to-metal bond. Microscopic projections on the surface of Armco Enameling Iron are the reason. These little metal "fingers" that are formed during firing take and hold the porcelain enamel finish in a tenacious grip. And, because this special enameling base contains a minimum of gas-forming impurities, perfect finish is easier to achieve.

Designed for One Job

Unlike many metals used for this purpose, Armco Enameling Iron is made only for porcelain enameling. That's why so many producers of high quality porcelain enameled products have specified this specially-processed enameling metal for more than 40 years.

For complete information, just fill in and mail the coupon for a copy of the catalog, "Armco Enameling Iron."



Tiny projections formed during firing on the surface of Armco Enameling Iron (above) are only about .000125-inch high. Although of microscopic size, they hold the finish in a tight grasp.

ARMCO STEEL CORPORATION
1817 Curtis Street, Middletown, Ohio

Please send me a copy of the catalog, "Armco Enameling Iron."

Name _____ Title _____
Firm _____
Street _____
City _____ Zone _____ State _____

ARMCO STEEL CORPORATION

1817 CURTIS STREET, MIDDLETOWN, OHIO

SHEFFIELD STEEL DIVISION • ARMCO DRAINAGE & METAL PRODUCTS, INC. • THE ARMCO INTERNATIONAL CORPORATION

Our Defense Problem: Is it Survival or Fiscal?

Official defense talk today comes close to double talk. One week we hear that we are "gambling with our very future" if defense is cut. The next week the same people say we can cut back farther.

That is silly talk. It does little to inspire the military. It does even less to convince the man on the street that we know what we are doing.

Of course we should keep the defense expenditures under control. We should not go hog wild on fringes or fancy stuff. But we ought to face the fact that adequate defense is not something to be turned on and off—unless we want to fritter away what we have accomplished.

If we were to find out later that our failure to build schools, roads, or bridges harmed us, we could rectify it. But if—too late—we came to the horrible conclusion that we messed up our defense plans it might be catastrophic.

We have discounted our military too much. Now we don't pay enough attention to them. The President may be the military expert he once was. But he may be leaning over backwards to offset his supposed bias towards the generals.

Sometimes it almost looks as if we were treating our defense budget as if we were arranging for a clam bake. If that is unfair, then let's say we act as if defense needs were just another item in our "gracious living."

It is far more than that. If we make mistakes now it will hurt later. We have colossal brass if we think we can "wish" ourselves safe from Communism. And we have suicidal misunderstanding if we think the present Moscow clique is any less cunning or brutal than the others.

There is no price too high to pay for defense. By defense we mean anything that will maintain the freedom and safety of our people—and our allies. What good would any "savings" or peace drive be if it ended up with a defeat for the Free World?

Our leaders had better get together and find out what they really think. Our people should not be fed the pap that things are "wonderful" or that international tension is considerably lessened. Our country's safety is at stake here. That is more important than elections, budgets, and clam bakes.

Let's listen to the Generals again for a change. Security is their business. Defense is survival before it becomes fiscal!

Tom Campbell

Editor-in-Chief

HERE'S WHY THE *'Budgit'*® ELECTRIC HOIST IS PREFERRED ABOVE ALL OTHERS IN ITS CLASS

Capacities: ⅛ to 2 tons. AC and DC models. 12-volt battery-operated models available for use on motor trucks and in areas without electric power.

All-around economy is yours when you invest in a 'Budgit' Electric Hoist. In large and small plants everywhere, men who know hoists rate it "tops" for efficient performance . . . for low-cost operation . . . for complete safety . . . for long attention-free service. Briefly, here is what 'Budgit' quality offers:

ECONOMY! **FAST LIFTING.** The ¼-ton size hoists the full load a foot in less than two seconds. Quick braking action saves time in spotting loads. Fast load handling between processing operations means more work done per day at less cost per unit.

ECONOMY! **SAVES EFFORT.** All strenuous and hazardous manual lifting eliminated. The human fatigue factor is greatly reduced. Worker productivity stays at a high level longer. Quality standards are more easily maintained.

ECONOMY! **USES LITTLE ELECTRICITY.** The ¼-ton size uses less current than a 500-watt bulb. In continuous test operation through 100,000 lifting cycles, the 1-ton 'Budgit' used only $6.00 worth of electricity.

ECONOMY! **LOW MAINTENANCE.** Simple design and few moving parts makes servicing easy. Precision engineering and processing of carefully selected materials assure enduring stamina. Your maintenance man will rarely see this hoist!

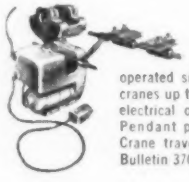
ECONOMY! **DESIGNED FOR SAFETY.** Two interlocked automatic brakes provided — a motor brake and a load brake. Each alone can hold the full load safely. Upper and lower safety stops prevent overtravel of the hook in either direction. Non-fracturing hooks open slowly when overloaded — give visible warning of danger. No exposed wiring between motor and controller; arc shields between contacts prevent short circuits. Roller-type load chain is superstrong — won't stretch or bind.

ECONOMY! **COMPLETE, PORTABLE.** Comes ready to hang up, plug in and use anywhere proper current is available. No extras to buy. No costly installation. ⅛-ton size weighs only 64 lbs. — 2-ton size, only 124 lbs.

The 'Budgit' is and always has been the most economical electric hoist to buy and use for intermittent service. Convince yourself! *Ask your "Shaw-Box" Distributor for complete details or write us for Bulletins 402 and 404.*

Safety Hooks can be provided on the 'Budgit' Electric Hoist to "lock in" slings and other attachments used to support loads.

'Tipit'. A link chain sling for tipping loads into and out of tight spots. Attaches to hoist load hook. Can be operated with any ½" wrench. Capacity: 1 ton. Weighs 8¼ lbs. Folder 78.



'Budgit' Bridge Drive. Enables users of hand-operated single or double girder cranes up to 10 tons to convert to electrical operation at low cost. Pendant push-button control. Crane travels at walking speed. Bulletin 376.

57A-12

MANNING MAXWELL & MOORE INC. TRADE MARK

'Budgit'® ELECTRIC HOISTS

MANNING, MAXWELL & MOORE, INC.

SHAW-BOX CRANE & HOIST DIVISION

382 West Broadway • Muskegon, Michigan

Builders of "SHAW-BOX" and 'LOAD LIFTER' Cranes, 'BUDGIT' and 'LOAD LIFTER' Hoists and other lifting specialties. Other Divisions produce 'ASHCROFT' Gauges, 'HANCOCK' Valves, 'CONSOLIDATED' Safety and Relief Valves, 'AMERICAN' and 'AMERICAN-MICROSEN' Industrial Instruments, and Aircraft Products.

In Canada: *Manning, Maxwell & Moore of Canada, Ltd., Avenue Road, Galt, Ontario.*

Success In Business

Sir—Please send two copies of the article "Success in Business Takes More Than Urge to Get Ahead" by Mr. Fairless. I believe that it is a very inspiring message to young men like myself.—R. Gordon, Vice Pres., Dave Gordon Steel Products, Inc., Tampa, Florida.

Sir—We would appreciate it very much if you could send us 20 copies of the article by Benjamin Fairless which appeared in your July 4 issue.

We want to send them to our salesmen for it has been a long while since we have seen as inspirational an article.—R. L. Wells, Wells Mfg. Co., Attleboro, Mass.

Salute

Sir—It was indeed a thrill to have received special recognition by THE IRON AGE. I feel that THE IRON AGE is a very important magazine because it does render a special service to the iron and steel industry. It is, therefore, definitely an honor to have been featured by your special article, "Iron Age Salutes."—A. H. Sommer, Vice Pres. & Gen. Supt., Keystone Steel & Wire Co., Peoria, Ill.

Check Circuits In Seconds

Sir—We are quite interested in the July 4 Newsfront entitled "Check Circuits In Seconds." The write-up is quite brief, but intimates the existence of a device which would be available to people outside the aircraft industry. Our problem is that we do not know who is making the device or how it works.—C. D. Card, Elec. Eng. Dept., The Warner & Swasey Co., Cleveland, Ohio.

▪ Write to the Republic Aviation Corp., Conklin St., Farmingdale, Long Island, N. Y.

Machining $

Sir—I would like six reprints of the article, "How To Get More For Your Machining Dollar" which appeared in your July 25 issue.

This is one of the best articles I have seen of this nature. You are to be complimented on its make-up. —W. S. Ellis, Gen. Mgr., Schulze & Burgess Co., Inc., Hazel Park, Mich.

Low Cost Solder

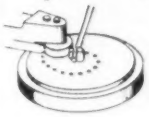
Sir—Please send me information concerning the Newsfront item "Solder Aluminum for Less" which is mentioned in your July 18 issue. —C. M. Heath, Engineering Laboratory, Linde Co., Div. of Union Carbide Corp., Tonawanda, N. Y.

▪ Write the Aluminum Co. of America, 1501 Alcoa Bldg., Pittsburgh, Pa.

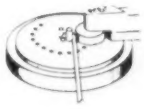
"This is supposed to read 'Due to the acute shortage of engineers' —Miss Larkin, not 'Due to the shortage of cute engineers!' "

HOW TO BEND
BARS and TUBING

HOW TO BEND . . .
OFF CENTER EYES



1. Insert bar stock between Locking Pin and Radius Pin of desired size.

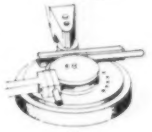


2. Set Forming Roller against material and advance Operating Arm.

3. Complete operation with one steady movement.

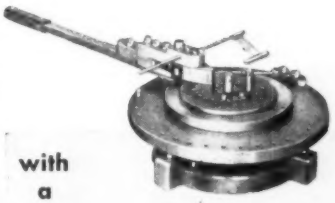
HOW TO BEND . . .
TUBING

1. Clamp tube. Insert Follow Block between material and Forming Roller.



2. Advance Operating Arm until it strikes Angle Stop.

3. Remove Follow Block, release clamp and remove tube.



with a
DI-ACRO
BENDER

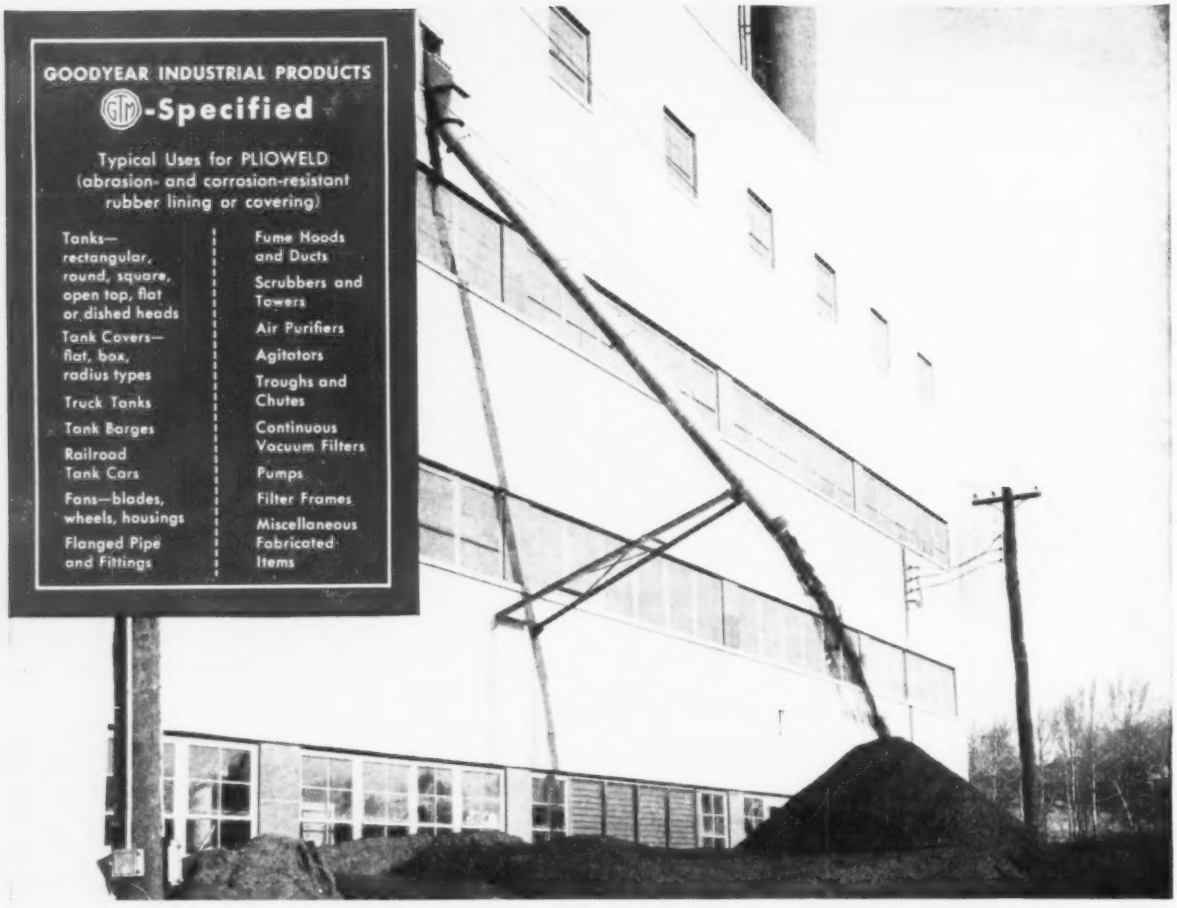
Complete details on forming rods and tubing with standard accessories as well as tips and technical data on angle, channel and other materials will be found in "It's Easy to Bend", a 32 page summary of Di-Acro Benders and bending. A copy is yours free of charge.

Consult the yellow pages of your phone book for the name of your nearest Di-Acro distributor or write:

pronounced die-ack-ro

O'NEIL-IRWIN MFG. CO.
302 8th Ave., Lake City, Minn.

di-acro PRECISION METALWORKING MACHINES



Steel chute "shot" in 18 months—rubber-lined, it lasts 6½ years!

It was a short life but a busy one for the steel-pipe coal chute used at this Pennsylvania plant. Each time the bunkers were filled, 60 tons of #3 barley coal–per hour–would chute out into the stockpiles. And this highly abrasive flow cut through heavy steel pipe in less than a year and a half.

Then the G.T.M.–Goodyear Technical Man–offered his suggestion: Line the pipe with PLIOWELD–Goodyear rubber lining that welds to metal by internal adhesion to form a remarkably abrasion-resistant surface. The results? *The rubber-lined pipe put in 6½ years of hard work–more than four times better than its unlined predecessor.*

Like to line up advantages and savings like these at your plant? Whether you use rubber linings or rolls – hose – belts – or any other industrial rubber products, the G.T.M. is your man. Contact him through your Goodyear Distributor or by writing Goodyear, Industrial Products Division, Akron 16, Ohio.

PLIOWELD LININGS by

GOODYEAR

THE GREATEST NAME IN RUBBER

Plioweld–T.M. The Goodyear Tire & Rubber Company, Akron, Ohio

IT'S SMART TO DO BUSINESS *with your Goodyear Distributor. He can give you fast, dependable service on Hose, V-Belts, Flat Belts and many other industrial rubber and nonrubber supplies. Look for him in the Yellow Pages under "Rubber Goods" or "Rubber Products."*

The Big Cut

The giant trepanning lathe shown on this week's cover is possibly the world's most powerful. It was installed just three months ago at the Midvale-Heppenstall Co., Philadelphia.

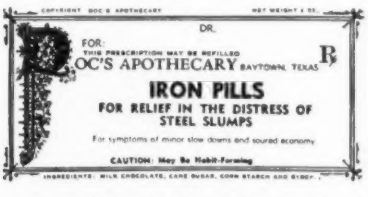
Any gold medals the machine might rate for its size are strictly secondary to its chief reason for being: To bore bigger holes in bigger forgings straighter and faster than ever before.

Watching it perform in the expected manner (see cover, l. to r.) are: Harry Davidson, M-H vice president; Herman DePova, works manager; Charles Gordon, superintendent of machine shops.

Trepanning, first introduced to the U. S. after World War II, has been developed to a fine point at Midvale - Heppenstall. For that story, plus details on this mammoth new lathe, turn to the article beginning on p. 91.

Boom or Bust

You may have seen a recent quote in "Time" magazine of editor-in-chief Tom Campbell on boom and gloom thinking. Perhaps this prompted a prescription for a Big Business First-Aid Economy Kit consisting of Gloom Pills for Bust Visions and Boom Pills for Lust Visions. They're compounded by promotion-minded Doc's Apothecary, an imaginary drug emporium of Baytown, Texas. Doc offers at least a hundred different pills for all symptoms at $1 a bottle.



In addition to Iron Pills for Steel Slumps (see cut) you can get this candy-coated placebo to relieve lagging sales, poor golf, high taxes and countless other business, personal and industrial ailments.

Here are a few more: Blockhead Pills for Thick Skulls, Fisherman Pills for Chronic Exaggeration and Obscene Pills for Narrow Minds.

Puzzlers

Who would ever think that a caddy would be a girl? Or could be a girl?

Well, the following did—and they are the winners for our July 11 puzzler:

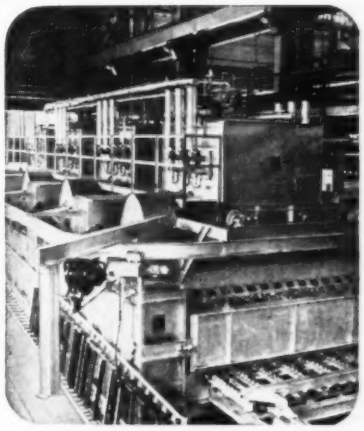
R. E. Crabtree, Youngstown Sheet & Tube Co., Dallas, Texas; Walter D. Beckley, Oxy-Catalyst, Wayne, Pa.; Our Old, fine friends Charlsie and friends from General Steel Castings (am inclined to think that Charlsie's little daughter, all 15 months of her, is now taking over); Revel A. de Turk, Hamilton Standard, Windsor Locks, Conn.; Ole friend Jim Mull, The North American Manufacturing Co., Cleveland (and Jim's letters are always really appreciated), and ole L. D. Snyder, Littlestown Hardware & Foundry Co., Littlestown, Pa.—who sent the puzzler in the first place. Many thanks!

No Escape!

Trying to get away from it all, as is customary at this time of year, G. Grant Carr, our New York editor, and his missus were gazing off into space in an inn on Nantucket Island. This is 30 miles out in the Atlantic, mind you.

All of a sudden, they both became aware of a familiar presence. Pulling themselves upright simultaneously, they shuffled over to a table loaded with reading matter for the customers. And there it was: The latest copy of THE IRON AGE. A fellow-guest had obviously brought it along for light vacation reading.

HEAT TREATS ALUMINUM ALLOYS UNIFORMITY ±2°F.



R-S FURNACES AT WYMAN-GORDON KEEP QUALITY UP ...COSTS DOWN

Where aluminum alloy forgings for 18,000 ... 35,000 ... and 50,000 ton presses must be heat treated to absolute uniformity R-S Furnaces were entrusted with the job. Six R-S Furnaces at Wyman-Gordon Products Corporation handle all types and sizes of forgings with extreme flexibility and maintain a uniformity of plus or minus 2° F. to 1100° F. Work is pushed thru furnace in steel trays in two rows on roller rails. Every piece emerging has absolute uniformity regardless of size, shape or weight.

For higher quality in heating and forging write for the illustrated folder giving full technical details to...

R-S FURNACE CO., INC.
Philadelphia 44, Pa.

IHEA

Car Hearth Furnaces
Continuous Furnaces
Rotary Type Furnaces

R-S FURNACES

Quantity
PRODUCTION
of
GREY IRON CASTINGS

*

ONE OF THE NATION'S
LARGEST AND MOST MODERN
PRODUCTION FOUNDRIES

*

ESTABLISHED 1866

THE WHELAND COMPANY

FOUNDRY DIVISION

MAIN OFFICE AND MANUFACTURING PLANTS

CHATTANOOGA 2, TENNESSEE

EXHIBITS, MEETINGS

Packaging & Handling Show—Oct. 28-31, Atlantic City. (SIPMHE, One Gateway Center, Pittsburgh 22.)

AtomFair '57—Oct. 28-31, New York. (Atomic Industrial Forum, 3 E. 54th St., N. Y. 22.)

Metal Show—Nov. 2-8, Chicago. (American Society for Metals, 7301 Euclid Ave., Cleveland 3.)

AUGUST

American Institute of Electrical Engineers—Pacific general meeting, Aug. 28-30, Chinook Hotel, Yakima, Wash. Society headquarters, 33 W. 39th St., New York.

SEPTEMBER

National Metal Trades Assn.—Eastern plant management conference, Sept. 8-11, Essex-Sussex Hotel, Spring Lake, N. J. Society headquarters, 337 W. Madison St., Chicago.

American Mining Congress—Metal mining and industrial minerals convention, Sept. 9-11, Hotels Utah & Newhouse, Salt Lake City, Utah. Society headquarters, 1200 18th St., Washington, D. C.

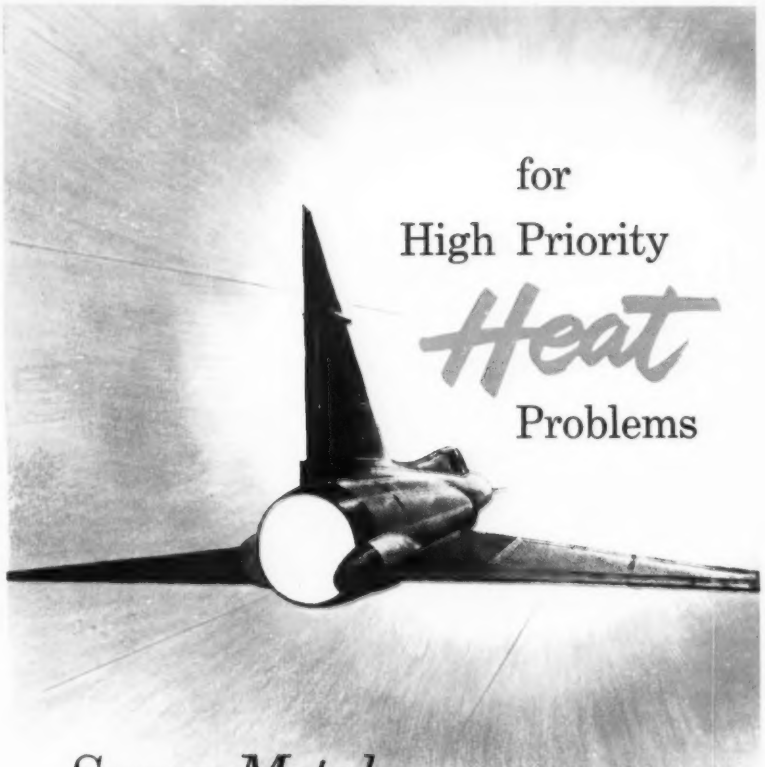
Society of Automotive Engineers—Tractor meeting and production forum, Sept. 9-12, Hotel Schroeder, Milwaukee. Society headquarters, 485 Lexington Ave., New York.

Instrument Society of America—12th annual instrument-automation conference and exhibit, Sept. 9-13, Cleveland Auditorium, Cleveland. Society headquarters, 313 Sixth Ave., Pittsburgh.

National Petroleum Assn.—Annual meeting, Sept. 11-13, Traymore Hotel, Atlantic City. Society headquarters, 958 Munsey Bldg., Washington.

Marking Device Assn.—National meeting, Sept. 19-20, Roosevelt

(Continued on P. 16)



for
High Priority
Heat
Problems

Super Metals
by **WALLINGFORD**

As man and machines fly higher and faster, beating the heat problem becomes more difficult . . . the need for super metals more acute. This is why WALLINGFORD has long engaged in research with super alloys that will successfully pass the rigorous test of high temperature applications.

Among the many super alloys researched by WALLINGFORD are Alloy A-286 and V-36 used for applications in jet engines, gas turbines and turbosuperchargers — turbine wheels and blades, frames, housings and afterburner and tail cone parts.

An unceasing program of metallurgical research and highly skilled personnel qualify WALLINGFORD to help you, whether your need is super metals, or quality stainless steel strip, tube or pipe.

Let us know your high temperature problems . . . we'll help you solve them.

Progress in Metals
for over 35 Years

THE
WALLINGFORD
STEEL CO.
WALLINGFORD, CONN., U.S.A.

COLD ROLLED STRIP: *Super Metals, Stainless, Alloy*
WELDED TUBES AND PIPE: *Super Metals, Stainless*

rolling taper pipe threads

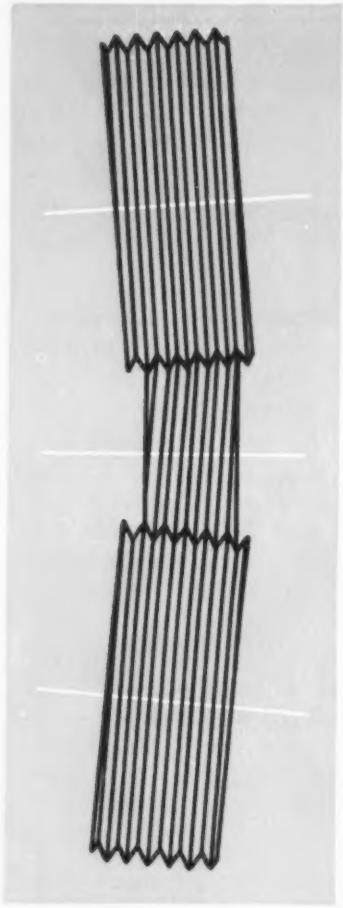
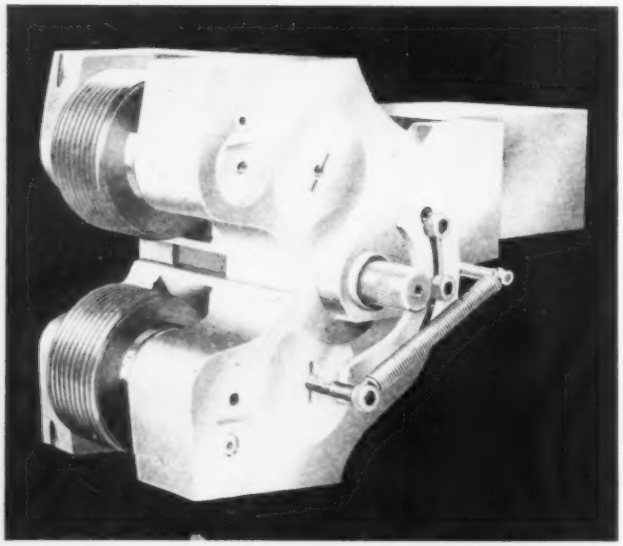


Figure 1

with the LANROLL thread rolling attachment



Thread-roll wear is minimized by the recently developed LANDIS Method (Patents Pending) for precision rolling of taper pipe threads (including dry-seal).

To produce the taper, the rolls of the LANROLL Attachment are supported on carbide shafts inclined to the required thread taper. This design enables the use of parallel rolls (see Figure 1) which reduces slippage between the workpiece and the rolls. With reduced slippage, roll life is materially increased. In addition, attachment stabilization (limited sidewise movement)

470-C

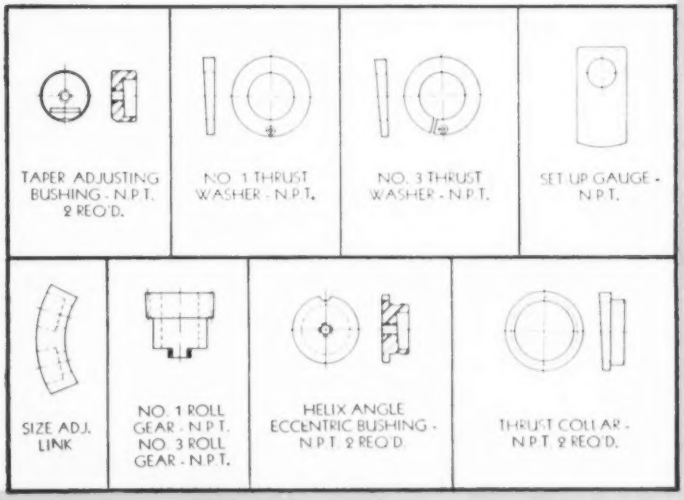
is greatly improved to permit rolling directly to a shoulder with safety.

Of an adjustable design, the LANROLL Attachments provide wide range coverage while retaining the rigidity of a non-adjustable tool. Either straight or tapered threads can now be produced with the same attachment through the use of proper rolls and auxiliary equipment. Five sizes with varying dimensions are available for use on the many sizes and makes of bar automatics, and will produce coarse pitch threads to Class 4 tolerances on all diameters from #5 to 1¾" for straight threads, and precision pipe threads from 1/16" to 1¼" in diameter.

In addition to proper rolls, the auxiliary equipment necessary to change from straight to taper threading is negligible, as illustrated in Figure 2. When changing from one pipe size to another within the range of the attachment, the size adjusting link, set-up gage and rolls are the only equipment changes required. With this design tooling flexibility is obtained with minimum cost. These changes assure operation of the attachment for every size within its range as though it were exclusively engineered for the particular work being threaded. Also, the same simplified and precise methods of set-up and roll timing used for straight threading are used for taper threading.

For additional information ask for Bulletin G-96 and specify straight or taper work.

Figure 2


TAPER ADJUSTING BUSHING - N.P.T. 2 REQ'D.
NO. 1 THRUST WASHER - N.P.T.
NO. 3 THRUST WASHER - N.P.T.
SET-UP GAUGE - N.P.T.
SIZE ADJ. LINK
NO. 1 ROLL GEAR - N.P.T. NO. 3 ROLL GEAR - N.P.T.
HELIX ANGLE ECCENTRIC BUSHING - N.P.T. 2 REQ'D.
THRUST COLLAR - N.P.T. 2 REQ'D.

longer roll life with LANDIS parallel-roll method

Note that in producing a taper thread one end of each roll is required to thread a larger diameter than its opposite end. This results in unequal circumferential travel by the respective roll ends during each revolution. However, in traveling these unequal distances both ends of the roll make a revolution in the same interval of time. Therefore, the end of each roll on a large thread diameter must travel at a higher peripheral velocity than its opposite end on the small diameter. These necessary differentials in peripheral velocities for the roll ends can only exist by slippage between the roll and the workpiece. This slippage becomes more acute on the larger diameters as the differentials become greater or where tapered rolls on parallel axis are used. **By presenting parallel rolls to the workpiece, the LANDIS Method (see Figure 1) reduces the differentials in peripheral velocities and its accompanying roll slippage.** Roll life, of course, is greatly benefited by any reduction of slippage.

In developing a roll diameter for a particular thread, the pitch diameter of the workpiece is used as a basis. If the workpiece is straight, the relationship of the roll diameter to the workpiece diameter remains constant. For taper threads the roll diameter is normally developed from the pitch diameter at the mid-point of the effective thread. Thus, the diameter of the roll thread in respect to the diameter of the workpiece thread will only agree at one point. On either side of this point the roll diameter will be either too large or too small. This disagreement in the roll and workpiece diameter relationship results in attachment instability (sidewise movement). Maximum instability occurs if taper threads are produced with tapered rolls on parallel axis as the relationship of the roll and workpiece diameters vary in direct opposition. This instability becomes more apparent on the larger diameters as wider thread rolls having a greater disagreement are required to produce the longer thread lengths. **By use of parallel rolls on inclined axis (see Figure 1) the LANDIS Method reduces disagreement in the relationship of the roll and and workpiece diameter by one half.** In this case, both ends of each roll have a pitch diameter equal to the P.D. from which the roll was developed. Improved attachment stabilization results and rolling to a shoulder can be accomplished with safety.

LANDIS Machine COMPANY WAYNESBORO PENNSYLVANIA

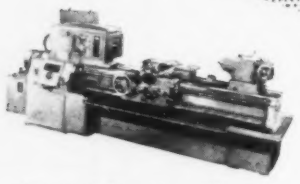
This inflationary spiral you will like!

Up she goes in a happy swoop—because this spiral indicates the *inflated machine tool output* you can achieve with a little judicious investigation—today.

To be sure, there are such unhappy upward spirals as are furnished by inflated labor and materials costs—but when you offset them with our Monarch type of inflation, there goes your profit spiral up in a happy swoop, too! Here's how:

Use Monarch Dyna-Shift Lathes. You get more speeds—a wider speed range—automatic speed selection for the desired surface cutting speed—a machine under full load during the entire cutting cycle. Result—productivity increase up to 25%; tool life up as much as 50%.

Write today for facts. You can't afford not to!



The revolutionary new Monarch Series 62 Preselector Dyna-Shift Lathe with the headstock that thinks. Just set it and forget it!

Monarch

ACCURACY • ECONOMY • LONG LIFE

TURNING MACHINES

FOR A GOOD TURN FASTER . . . TURN TO MONARCH

THE MONARCH MACHINE TOOL COMPANY • SIDNEY, OHIO

EXHIBITS, MEETINGS

Continued from P. 13

Hotel, New Orleans. Society headquarters, 912 Chicago Ave., Evanston, Ill.

Steel Founder's Society of America—Fall meeting, Sept. 23-24, The Homestead, Hot Springs, Va. Society headquarters, 606 Terminal Tower, Cleveland.

The American Society of Mechanical Engineers—Fall meeting, Sept. 23-25, Statler Hotel, Hartford, Conn. Society headquarters, 29 W. 39th St., New York.

Standards Engineers Society—Sixth annual meeting on standardization—economy through application, Sept. 23-25, Hotel Commodore, New York. Society headquarters, P. O. Box 281, Camden, N. J.

Assn. of Iron & Steel Engineers—Annual convention, Sept. 23-26, Penn Sheraton Hotel, Pittsburgh. Society headquarters, 1010 Empire Bldg., Pittsburgh.

American Hot Dip Galvanizers Assn.—Semi-annual meeting, Sept. 26-27, Netherland-Hilton Hotel, Cincinnati. Society headquarters, 1806 First National Bank Bldg., Pittsburgh.

OCTOBER

The Electrochemical Society—Semi-annual meeting, Oct. 6-10, Statler Hotel, Buffalo. Society headquarters, 216 W. 102nd St., New York.

American Institute of Steel Construction—35th annual meeting, Oct. 6-11, Hotel del Coronado, Calif. Society headquarters, 101 Park Ave., New York.

American Society of Lubrication Engineers—Fourth conference, Oct. 7-9, Royal York Hotel, Toronto, Ont., Canada. Society headquarters, 84 E. Randolph St., Chicago.

Committee on Vacuum Techniques—Fourth annual symposium on high vacuum technology, Oct. 9-11, Hotel Somerset, Boston. Society headquarters, Box 1282, Boston.

How a year in the Antarctic proved that USS "T-1" Steel "can really take it"

THE SKIS on these gigantic 10½-ton sleds are made of USS "T-1" Steel. Over a year ago, 38 of the sleds went into service as cargo carriers for the Navy's OPERATION DEEP FREEZE in Antarctica. During that time they have been subjected to temperatures around 69° below zero. Towed by powerful tractors, they have scraped and gouged—400 miles in a single trip—across the rock-hard ice of the South Polar Plateau. And each sled has carried up to 20 tons of cargo per trip.

What has been the effect of this severe service on the skis of USS "T-1" Steel? None. They have remained strong and tough, despite the bitter sub-zero temperatures. No brittleness. No failure. USS "T-1" Steel's hardness has successfully resisted the tremendous abrasive properties of crusted snow and ice. Its toughness has prevented low-temperature impact failure. What's more, its very high yield strength (90,000 psi minimum) permitted the skis to be fabricated from ¼" USS "T-1" Steel plate. Thus, the skis were built *lighter*, yet *stronger*.

The USS "T-1" Steel skis are 154 inches long and 34 inches wide, were cold-formed on a brake press in the shape of troughs. Then the front and back ends of the troughs were notched at the outer line by gas cutting, formed up and together, then welded to make the curved front and back ends of the skis. Welding was done with E-12015 rod.

USS "T-1" Steel is being used to increase strength and durability, while reducing weight and costs in a wide variety of applications from bridge construction to mining equipment. For complete information, write to United States Steel, 525 William Penn Place, Pittsburgh 30, Pennsylvania.

Sleighs being assembled at landing point in Antarctica. The massive sleighs were designed jointly by the U. S. Navy and Otaco, Limited, of Orillia, Ontario, Canada.

OPERATION DEEP FREEZE

During the present International Geophysical Year (1957-1958), American scientists, with the support of the United States Navy, will, through research at Antarctica, endeavor to advance the world's knowledge of meteorology, glaciology, ionospheric physics, geomagnetism, aurora and air glow, cosmic rays, seismology and gravity.

USS "T-1" CONSTRUCTIONAL ALLOY STEEL

"USS" and "T-1" are registered trademarks

UNITED STATES STEEL

United States Steel Corporation, Pittsburgh · Columbia-Geneva Steel Division, San Francisco · Tennessee Coal & Iron Division, Fairfield, Ala.
United States Steel Supply Division, Warehouse Distributors, Coast to Coast
United States Steel Export Company, New York

Pressurizer for designed with stainless

The reactor we are talking about contains a fissionable nuclear core through which passes thousands of gallons of water per minute at elevated temperature and pressure. This pressurized radioactive water transfers heat from the reactor core to a shell-and-tube-type steam generator which in turn produces non-radioactive steam in the secondary system for power turbine operation.

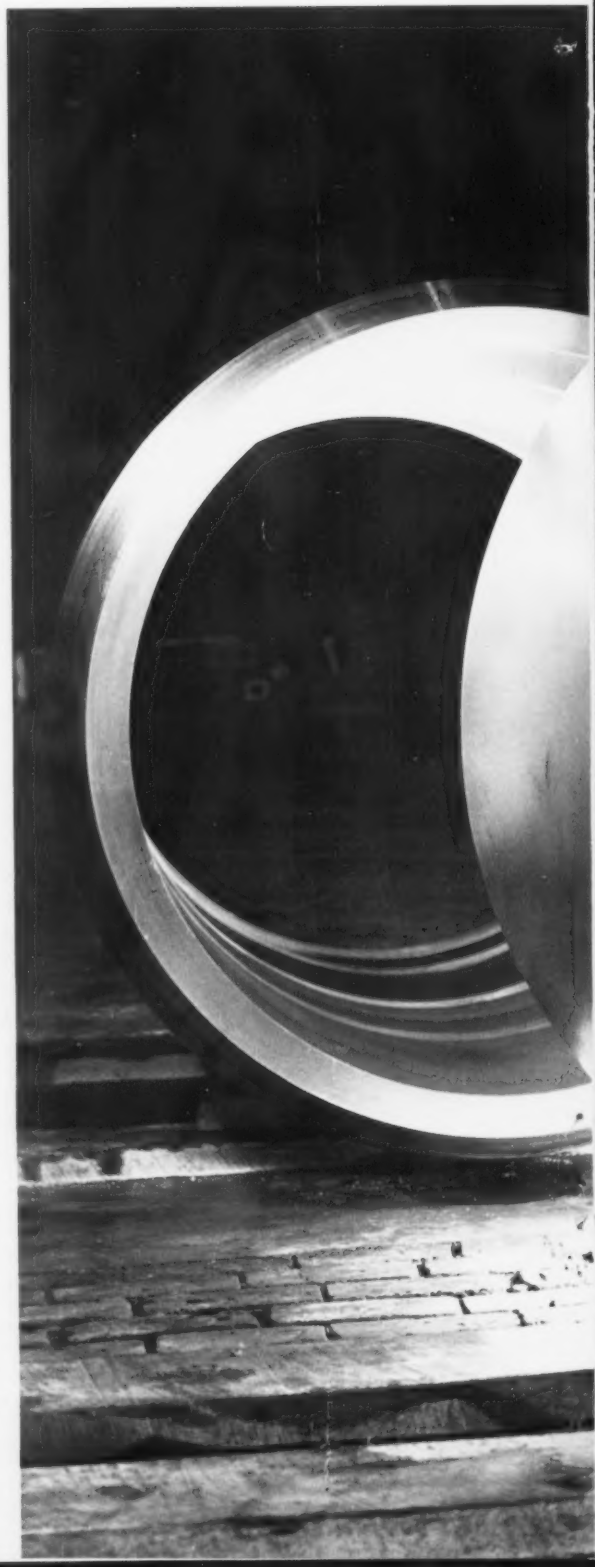
As power requirements change, the temperature of the primary water is maintained by moving neutron-absorbing reactor control rods in or out of the reactor. Resulting pressure and volumetric changes of the primary water system must be controlled, and this is the job of the pressurizer vessel.

When the primary system water pressure drops, high-capacity back-up immersion heaters at the bottom of the pressurizer go into action to heat the water and generate more steam and maintain pressure. When the primary system pressure goes *up*, water sprays inside the pressurizer are activated to collapse the steam bubble, thus reducing the pressure and permitting positive water surges from the primary system. Since the walls are alternately exposed to wetted and vaporous conditions at high temperatures, a severely corrosive environment exists. Corrosion in this vessel could result in a hazardous level of radioactivity throughout the primary side of the plant. The choice of a proper steel to insure against this hazard was a major consideration. This is why the pressurizer was designed with stainless steel.

Electric furnace and metallurgical staffs worked together to obtain the precise chemical composition specified. Great care was taken during processing in the electric furnace shop. Then, forge press crews, heat treaters and machinists combined skills to produce the finished rings, which certainly rank among the finest USS Quality Forgings ever produced.

Your USS Quality Forging order makes use of the same steel-making facilities, the same processing equipment, and most important: your forging is made by the same skilled workmen in our Homestead Forgings Division.

If you'd like to inquire about a USS Quality Forging made under these conditions, or if you'd like our free 32-page booklet on the subject, please write to United States Steel, 525 William Penn Place, Pittsburgh 30, Pa.



USS
QUALITY
FORGINGS

heavy machinery parts... carbon, alloy, stainless
forged steel rolls and back-up roll sleeves
electrical and water wheel shafts
specialty forgings of all types

USS

UNITED STATES STEEL

nuclear reactor system steel USS Quality Forgings

NOW AVAILABLE COAST TO COAST FROM WAREHOUSE STOCKS

USS FREMAX

the free-machining plate steel that

- cuts machining costs
- prolongs tool life
- speeds output
- gives smooth surface finish

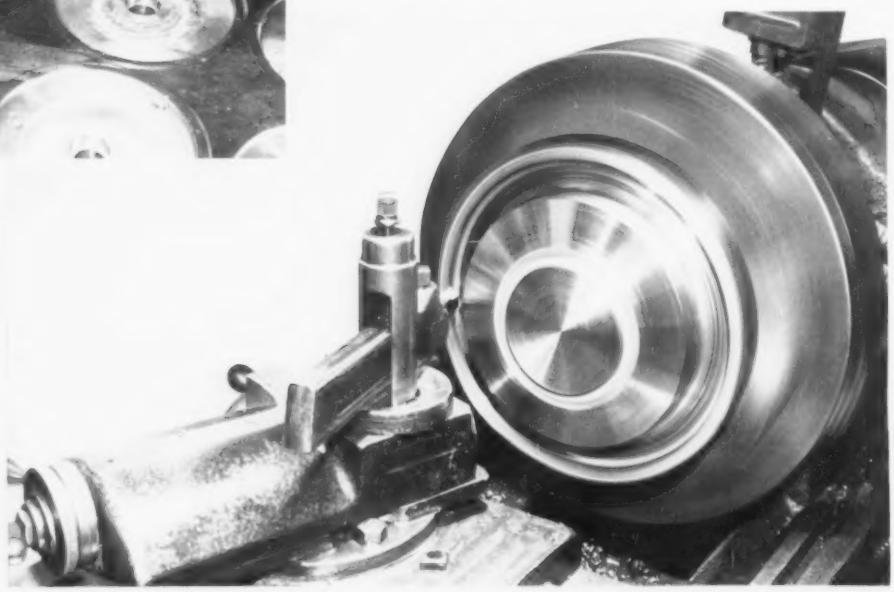
USS FREMAX is a low carbon, high sulphur, free-machining plate steel that is far superior to ordinary carbon plate steels for such machining operations as cutting, drilling, knurling, milling, broaching, shaping, turning and threading. *Tests show that* FREMAX *can be machined at cutting speeds 100 to 200% greater than SAE 1020 plate steel while still maintaining the same tool life*, thus enabling you to obtain higher production and lower cost per item.

You will find USS FREMAX ideally suitable for dies and molds where a smooth, unblemished surface finish is a prime factor. FREMAX is easy to weld, enabling you to make strong, sound, tight welded joints.

We can give you immediate delivery on USS FREMAX plate steel. Just phone, wire or write us at Chicago, or contact any of our warehouses.

Prompt Delivery

from your nearest warehouse



This core for a rubber brake seal mold shows the fine surface finish obtainable on USS FREMAX plate steel.

U. S. STEEL SUPPLY

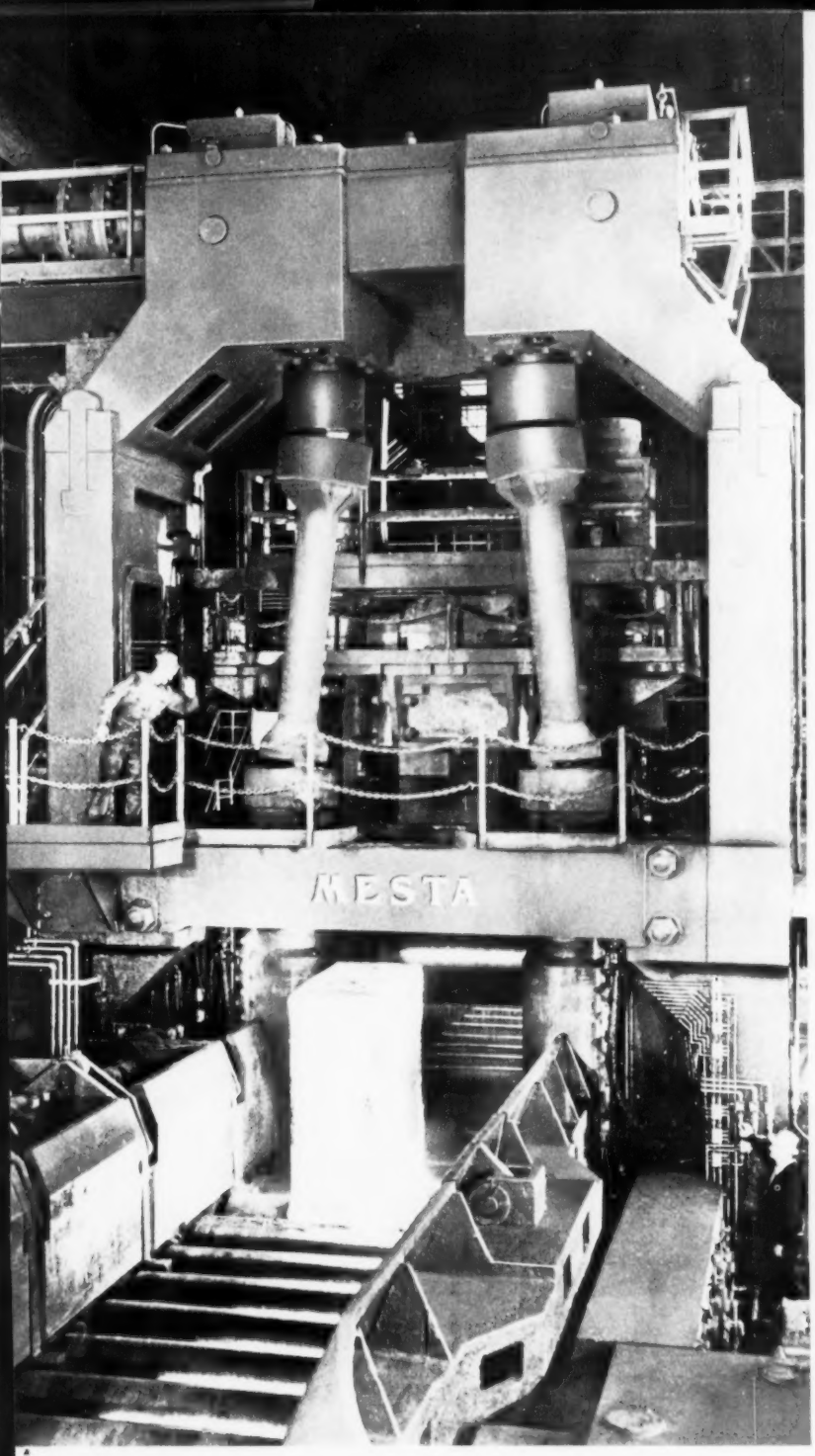
DIVISION

P. O. Box 1099, Chicago 90, Ill.

General Offices:
208 S. LaSalle Street, Chicago 4, Ill.

Warehouses and Sales Offices Coast to Coast

UNITED STATES STEEL



Experienced engineering and development

KEY TO HIGHER TONNAGE

...with Westinghouse-equipped reversing mills

Knocking down an ingot on schedule places heavy demands on your primary reversing mill. Drives and auxiliary equipment take rough abuse. To give you an edge in meeting demands, Westinghouse drives are engineered from long experience. New advances in Westinghouse automatic controls and coordinated auxiliary equipment keep your mill on schedule. MP-3051

YOU CAN BE SURE... IF IT'S Westinghouse

Dependability is tailor made

Experience tailors each drive

Today, reversing mill drive equipment takes heavier abuse than ever before. Growing operating and tonnage requirements can't be met by yesterday's set of standards. That's why experienced engineering at Westinghouse tailors each drive to the specific mill. In this way, you can be sure of top performance, maximum accessibility to all parts of the drive, and rugged construction quality for reliability today and long into the future.

The Westinghouse reversing mill drive, at right, is a good example. Main drive is a 12,000 hp., 40 80 rpm double-armature twin motor. Edger drive (top) is a 4,000 hp., 60 150 rpm double-armature motor. Time-saving accessibility is provided by: 1) large walk-in endbells, 2) extra space for brush accessibility, both radially and axially, and 3) absence of baffle restrictions between the commutator area and the stator or rotor windings.

Heavy-duty thrust bearings are located at the mill end of the main drive pedestal bearings to permit easy, routine inspections. Removable end-case permits complete inspection and maintenance without disturbing either journal bearing or bearing cap.

Rugged construction of the Westinghouse reversing mill drive incorporates heavy-duty bedplates supported on concrete foundations. Pedestal cap bolts and base bolts extend deep into foundation concrete. Mill-end bearings are supported by massive pedestals using foundation keys. Each armature coil is rigidly and individually braced, front and rear. Armature coil cross connections are securly encased in a steel box at the rear of the rotor and flexibly connected to armature coils.

Oscillotrol (R) thrust oil-damper system effectively damps out rotor oscillations caused by pulses from mill-spindle coupling action on twin-drive motors.

MP-3051

YOU CAN BE SURE... IF IT'S Westinghouse

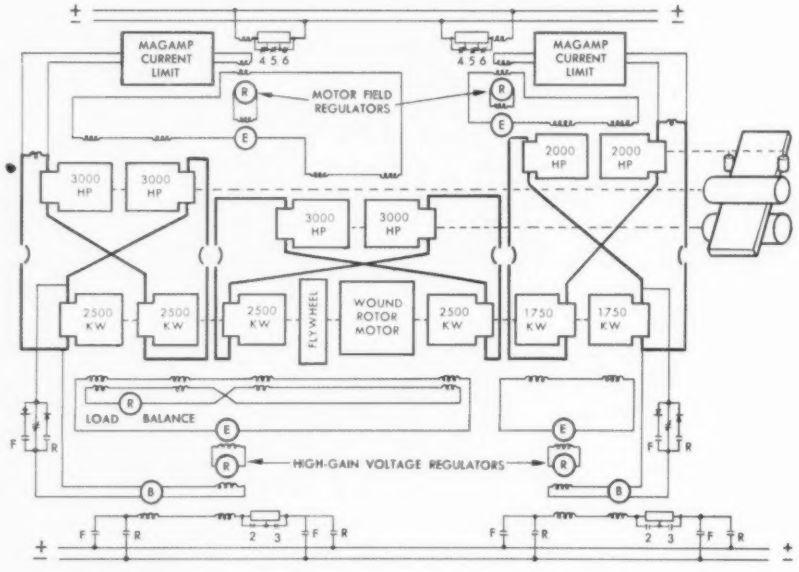
SYSTEM FEATURES

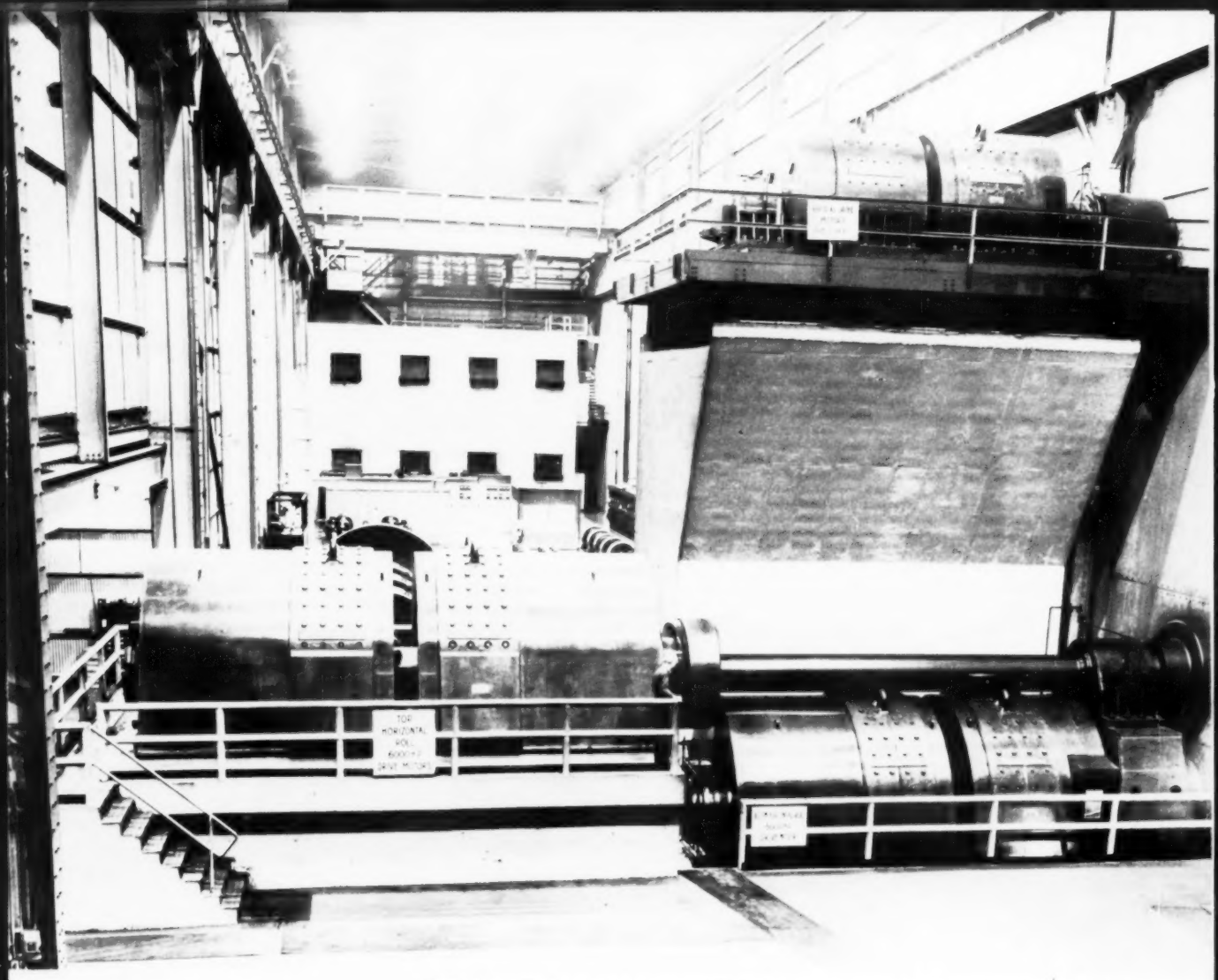
Sandwich series loops are used for each of the pairs of double-armature twin-drive motors and for the double-armature edger motor to minimize the number of circuit breakers and load balance equipment. A load balance regulator excites auxiliary fields on the 2500 kw generators to balance the twin-drive motor loads.

High-gain voltage regulators excite generators to give fast changes in response to the operator's controls.

Motor field regulators excite motors to give changes in speed by motor-field control.

MAGAMP (R) (magnetic amplifier) current-limit regulator builds up motor field strength to increase the torque per ampere for loads approaching 200%.





Typical reversing mill drive using 12,000 hp, 40 80 rpm double-armature twin motor. Edger drive (top) is 4,000 hp, 60 150 rpm double-armature motor.

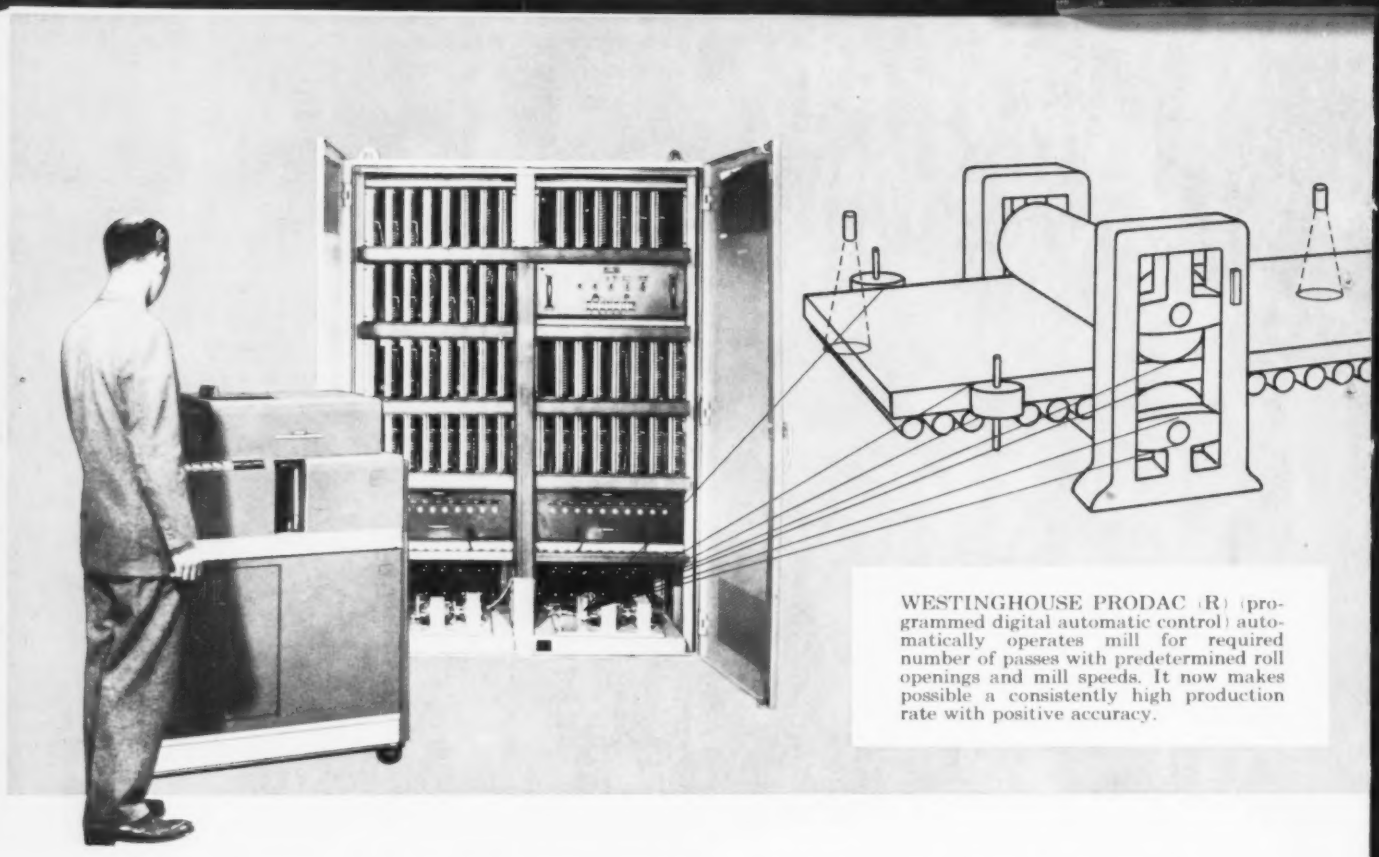
WESTINGHOUSE EQUIPMENT SERVES THESE USERS

YEAR	CUSTOMER	LOCATION	MILL	HP	RPM
1951	U. S. Steel Corporation	Fairless Hills, Pa.	40" Blooming Mill	8000*	65-130
1951	☆Sheffield Steel Division	Kansas City, Mo.	32" Blooming Mill	4000	60-150
1951	Laclede Steel Company	Alton, Illinois	35" Blooming Mill	5000	60-150
1951	Dow Chemical Company	Madison, Illinois	84" Reversing Mill	6000	55-156
1951	U. S. Steel Corporation	Morrisville, Pa.	Universal Slabbing Mill	12000*†	40-80
1951	▽Great Lakes Steel Corporation	Detroit, Michigan	Universal Slabbing Mill	12000*†	40-80
1953	Reynolds Metals Company	McCook, Illinois	144" Taper Mill	3000	125-250
1954	Inland Steel Company	Indiana Harbor, Ill.	Wide Flange Beam Mill	7000†	80-160
1955	Aluminum Co. of America	Davenport, Iowa	160" Slabbing Mill	7000*	30-60
1955	Empressa Nacional Siderurgica	Spain	132" Plate Mill	7000*	40-80
1955	Jones & Laughlin Steel Corp.	Cleveland, Ohio	Slabbing Mill	10000*	40-100
1955	Kaiser Al. & Chem. Corp.	Ravenswood, W. Va.	168" Slabbing Mill	10000*†	30-60
1955	Kaiser Al. & Chem. Corp.	Ravenswood, W. Va.	110" Slabbing Mill	6000	30-60
1955	Republic Steel Corp.	Cleveland, Ohio	Universal Slabbing Mill	12000*	40-80
1955	Jones & Laughlin Steel Corp.	Aliquippa, Pa.	Reversing Rougher	6000*	40-100
1955	Jones & Laughlin Steel Corp.	Cleveland, Ohio	Reversing Rougher	8000*	40-80
1955	Crucible Steel Co. of America	Midland, Pa.	Roughing Mill	3500	50-150
1955	Armco Steel Corporation	Butler, Pa.	Reversing Rougher	7000	40-100
1956	U. S. Steel Corporation	South Chicago, Illinois	Blooming Mill	12000*†	40-80
1956	U. S. Steel Corporation	Gary, Indiana	Universal Slabbing Mill	12000*†	40-80
1956	Altos Hornos	Mexico	Blooming Mill	6000*	40-80
1956	Large Eastern Steel Company		Blooming Mill	3000	60-150
1956	Reynolds Metals Company	Listerhill, Alabama	170" Slabbing Mill	7000*	30-60
1956	Tata Iron & Steel	India	Reversing Rougher	3500*	60-150
1956	Kaiser Steel Company	Fontana, California	90" Slabbing Mill	10000*	40-100
1956	Olin Mathieson Chem. Corp.	Omal, Ohio	96" Slabbing Mill	5000	35-70
1956	Empire Steel Corporation	Mansfield, Ohio	Reversing Rougher	5000	50-120

☆Armco Steel Corp. ▽Division of National Steel Corp. *Twin Drive †Double Armature

MP-3051

Auxiliary equipment takes over more responsibility



WESTINGHOUSE PRODAC (R) (programmed digital automatic control) automatically operates mill for required number of passes with predetermined roll openings and mill speeds. It now makes possible a consistently high production rate with positive accuracy.

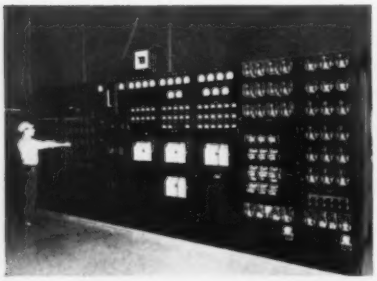
Reversing mills are more precise, automatic with Westinghouse auxiliaries

Continued research and development by Westinghouse helps to make your operations more precise and automatic. A recent example is PRODAC control. It makes possible the first completely automatic mill with card-programmed rolling information.

Unmatched Westinghouse engineering for high-tonnage reversing mill operation is at your service . . . from planning to design, installation and start-up. A skilled Westinghouse team will accept unit responsibility and work with you and your consulting engineers.

Contact your Westinghouse sales office for further details . . . Westinghouse Electric Corporation, 3 Gateway Center, P.O. Box 868, Pittsburgh 30, Pa.

MP-3051



WESTINGHOUSE main-drive control panels provide centralized start-up switches for fans and motor-generator sets, and metering for power and regulating circuits.

WESTINGHOUSE variable voltage control for all auxiliaries minimizes handling time. Transfer switches and emergency bus arrangement afford relief in case of generator failure.

MCT600 INDIVIDUAL TABLE ROLL MOTOR, silicone insulated; drives mill tables directly; in ratings at 230 volts; frame sizes from 604 to 618; 3.75 hp to 50 hp, 157 rpm to 85 rpm.

YOU CAN BE **SURE**... IF IT'S Westinghouse

Specialties of the House

ROEBLING is a specialist in galvanizing, with practically unmatched facilities for producing galvanized wire in enormous quantities and in complete size ranges. Hot galvanized is available in sizes from .283" to .035". . . Roegal (drawn galvanized) from .187" to .005".

You *pay* for the best when you buy galvanized wire. Make sure you *get* it—specify Roebling! Write Wire and Cold Rolled Steel Products Division, John A. Roebling's Sons Corporation, Trenton 2, N. J.

ROEBLING

Branch Offices in Principal Cities
Subsidiary of The Colorado Fuel and Iron Corporation

Roebling... Your Product is Better for it

PHOTO BY MCMANUS

CLEVELAND Fabricating Tools

PUNCHES • SHEARS • PLANERS • DRILLS
BENDING or STRAIGHTENING ROLLS

WHATEVER your metal fabricating needs, chances are you'll solve them best with Cleveland engineered equipment. You can be sure of dependable, economical performance, for all Cleveland machines, both special and standard, benefit by our 75 years of experience in this field.

Shown here are a few of this extensive Cleveland line. We will gladly furnish you with complete specifications covering any type of Fabricating Tool in which you may be interested.

A-7531

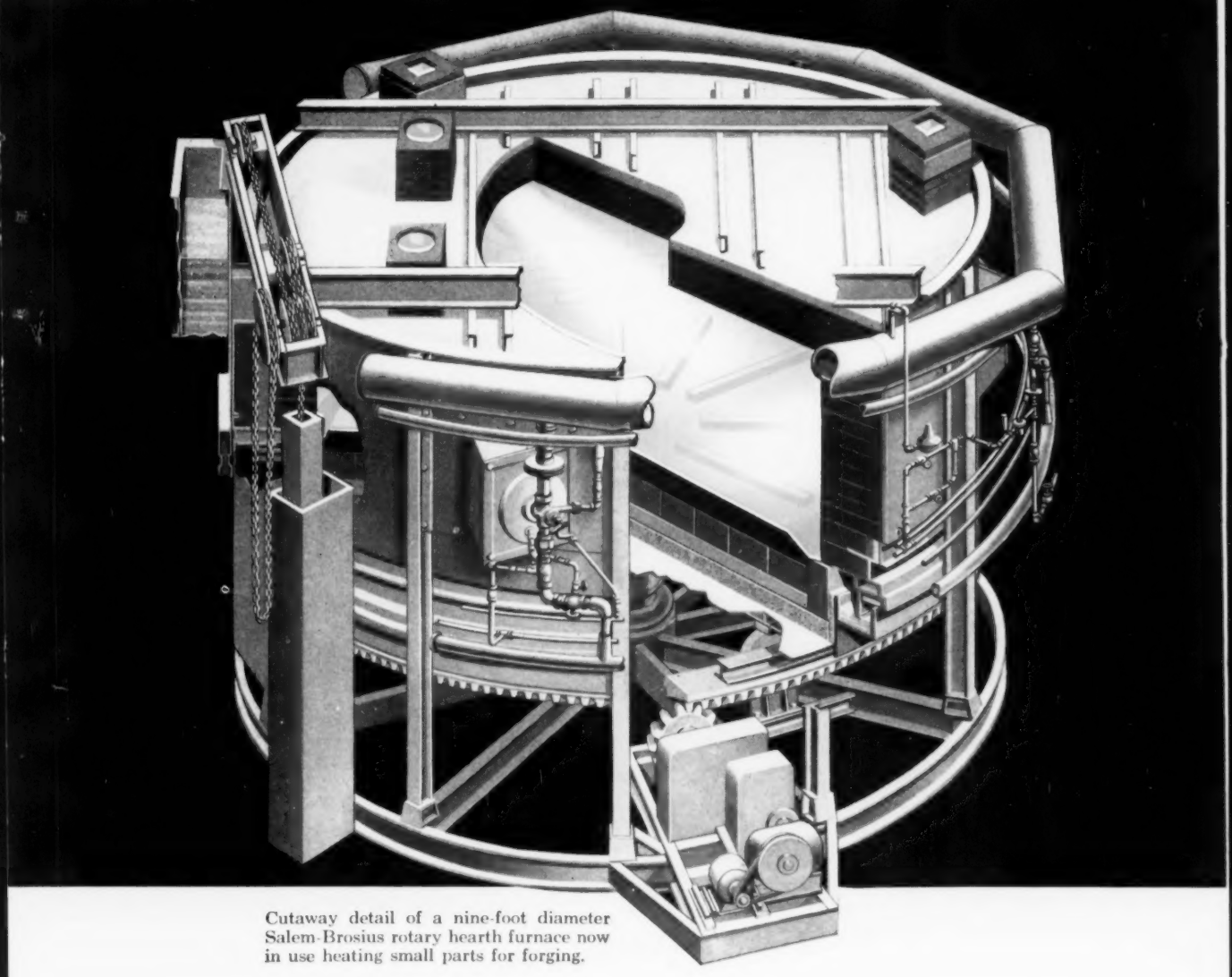
Write for your copy of Cleveland Fabricating Tools!

THE CLEVELAND PUNCH & SHEAR WORKS CO. U.S.A.

THE CLEVELAND PUNCH & SHEAR WORKS COMPANY

CLEVELAND 14 • OHIO

NEW YORK • CHICAGO • DETROIT • PHILADELPHIA • E. LANSING



Cutaway detail of a nine-foot diameter Salem-Brosius rotary hearth furnace now in use heating small parts for forging.

This Salem-Brosius rotary furnace in your forge shop saves you money

Companies producing parts for aircraft, automobiles, farm machinery, home appliances and a host of other products find the most economical and efficient furnace they can use to heat parts for production forging is the rotary type shown here. Burners are tangentially placed, and the heat is accurately controlled and uniformly distributed throughout the furnace chamber. The speed of rotation may be varied and is precisely set to the need of the product.

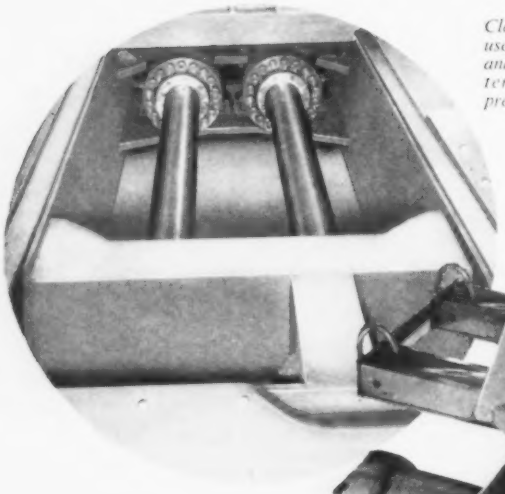
There is no practical forge heating method known that can equal the high production, low maintenance, low fuel cost, and uniformity of product heating of these specially designed rotary hearths. Salem-Brosius has designed and built more rotary hearth furnaces than any other company in the world. Write to us for further information.

SALEM-BROSIUS, INC.

CARNEGIE, PENNSYLVANIA

In Canada: Salem Engineering Limited • 1525 Bloor Street West, Toronto 9, Ontario

SPECIAL MECHANICAL EQUIPMENT • INDUSTRIAL HEATING FURNACES • MATERIALS HANDLING EQUIPMENT



Close up of Acipco steel tubes used as hydraulic cylinders and rams in the new Dempster-Balester scrap metal press.

DEMPSTER BALESTER

New Dempster-Balester "750" features the Auxiliary-Compression Door and Skip-Pan Loader. New, longer charging box handles scrap as large as a complete auto body.

ACIPCO

Centrifugally Spun

STEEL TUBES

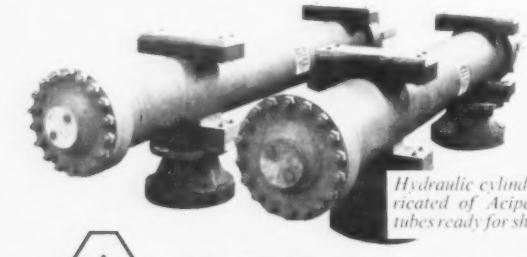
Selected for Newly Developed Press

Dempster Brothers, Inc., of Knoxville, Tennessee, is one of the country's leading manufacturers of baling equipment. They also manufacture equipment in the famous Dempster-Dumpster System of materials handling.

When Dempster Brothers' engineers required powerful hydraulic cylinders for their new "750" Dempster-Balester, they called on Acipco. Working with Dempster Brothers' creative engineering staff, Acipco supplied the two main hydraulic cylinders, completely fabricated and assembled, for this new, more economical press.

The Dempster-Balester main cylinders are examples of the extra advantages you get when you specify Acipco centrifugally spun steel tubes for your application. In addition to getting high quality tubes with the exact physical, metallurgical and chemical properties your application requires, you get the benefits of expert technical assistance and Acipco's combination of complete facilities and manufacturing competence.

If you manufacture or design products requiring tubular steel, your nearest Acipco distributor will be glad to supply information about Acipco steel tube applications in your field.



Hydraulic cylinders fabricated of Acipco steel tubes ready for shipment.

SIZE RANGE: Lengths up to 16' — longer lengths by welding tubes together. OD's from 2.25" to 50"; wall thicknesses from .25" to 4"

ANALYSES: All alloy grades in steel and cast iron, including heat and corrosion resistant stainless steels; plain carbon grades and special non-standard analyses.

AMERICAN CAST IRON PIPE CO.

ACIPCO

Special Products Division

BIRMINGHAM 2, ALABAMA

DISTRIBUTORS

Austin-Hastings Co., Inc.
226 Binney St.
Cambridge 42, Mass.

Peter A. Frasse and Co., Inc.
17 Grand St.
New York 13, N. Y.

Lyman Tube & Bearings, Ltd.
920 Ste. Sophie Lane
Montreal 3, Canada

Vinson Steel & Aluminum Co.
4606 Singleton Blvd.
Dallas 7, Texas

J. M. Tull Metal & Supply Co.
285 Marietta St., N.W.
Atlanta, Ga.

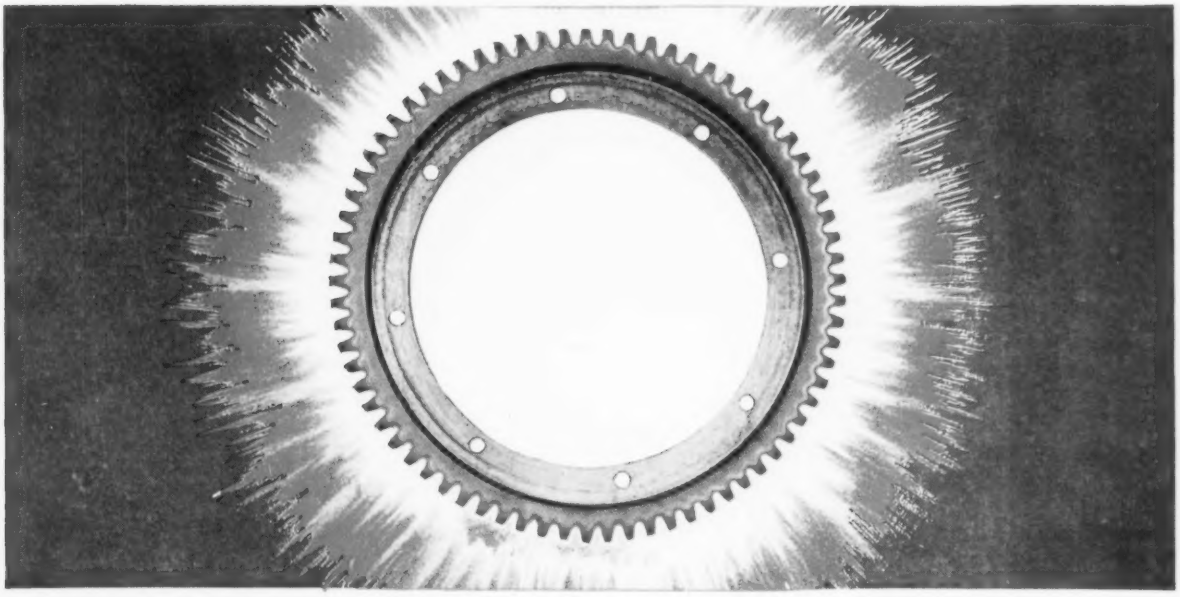
C. A. Roberts Company
2401 Twenty-fifth Avenue
Franklin Park, Ill.

Strong, Carlisle & Hammond Co.
1392 W. Third St.
Cleveland 13, Ohio

Ducommun Metals & Supply Co.
4890 So. Alameda St.
Los Angeles 54, Calif.

IH Saves $82,507 Per Year

with TOCCO Induction Hardening*



Gears, shafts, pins, wheels, tubes and bars—almost any size or shape of part—or any metal, too—is adaptable to TOCCO hardening, brazing, annealing or heating for forging.

Production Up—Engineers at the Milwaukee Works of International Harvester Company have adopted TOCCO for hardening final drive gears for famous International Harvester farm tractors. TOCCO increases production on the gear shown here from 14 to 35 per hour, 250% faster than conventional heating method, reduces job from a 3 shift to 2 shift operation, even with increased production schedule. Heating time is 35 seconds; oil quench, 60 seconds.

Costs Down—TOCCO cuts cost—saves $82,507 per year on application shown above. TOCCO makes possible use of C-1050 A.R.R. steel instead of expensive A-8645-H alloy steel previously required. TOCCO also eliminates shot-blast, formerly needed to remove scale, and extra machining operations that used to be necessary to compensate for distortion.

Gear shown is 18½" O.D., width of face is 2", weight 34 pounds, 73 teeth. Hardness obtained is 55-66 R.C., using 140 K.W. of 10,000 cycle power.

Our Engineers can probably find applications in your plant where TOCCO can increase output and reduce unit costs.

THE OHIO CRANKSHAFT COMPANY

Mail Coupon Today — **NEW FREE Bulletin**

The Ohio Crankshaft Co. • Dept. A-8, Cleveland 5, Ohio

Please send copy of "Typical Results of TOCCO Induction Hardening and Heat Treating".

Name_____

Position_____

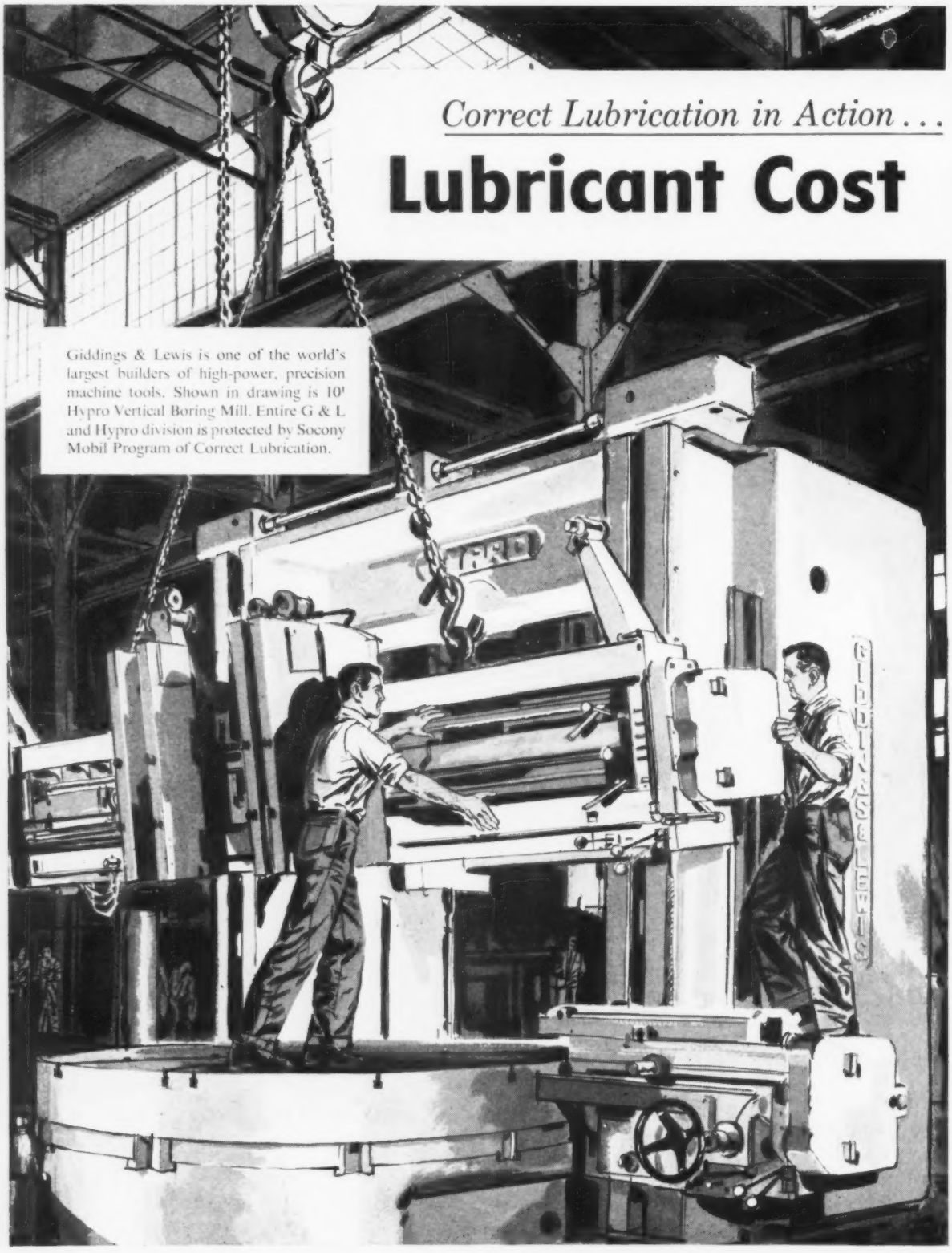
Company_____

Address_____

City_____ Zone____ State_____

Correct Lubrication in Action . . .

Lubricant Cost



Giddings & Lewis is one of the world's largest builders of high-power, precision machine tools. Shown in drawing is 10' Hypro Vertical Boring Mill. Entire G & L and Hypro division is protected by Socony Mobil Program of Correct Lubrication.

Mobil **SOCONY MOBIL**

Leader in Lubrication for over 91 years

in the **Machine Tool Industry**

Per Machine Cut 18%

One of many ways Giddings & Lewis Machine Tool Company has increased profits with the help of Socony Mobil

To Giddings & Lewis, one of the most direct ways to increase net profits is to reduce maintenance costs. That's why this company, a leading builder of quality, high-precision machine tools, relies on a Mobil Program of Correct Lubrication.

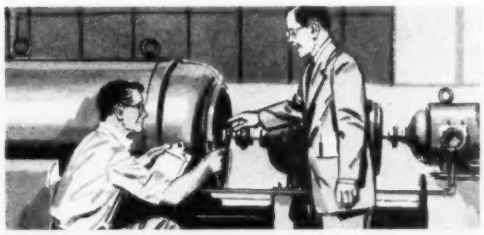
In just three years a Mobil "team" of lubrication specialists, working closely with plant personnel, cut lubricant costs per machine 17.9% . . . reduced lubricant application cost 7.6%.

These savings were but a few of the many and varied cost-cuts achieved through Mobil products and Mobil service. They reflect the many hours spent by Socony Mobil field and laboratory personnel in studying machine operations, preparing technical reports, making analyses of products in use.

Why not rely on a Mobil *Program of Correct Lubrication* to help *you* improve production and reduce maintenance costs?

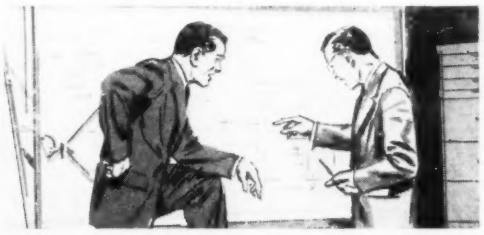
Can you afford to accept less than a cost-cutting service like this?

After a Mobil representative makes a lubrication analysis of your plant, a program of Correct Lubrication is put into action. Described below are some of the features of this program and how they benefited Giddings & Lewis.



Lubrication specialists, the most experienced in the petroleum industry, are ready to help you solve the knottiest lubrication problem. **For example, a Mobil engineer helped G & L solve a problem of repeated bearing failures on shop planers. His lubricant recommendation eliminated the trouble . . . saved $244 a year on each planer.**

Constant Quality Checks are kept on Mobil lubricants in use. Socony Mobil offers more analytical service than any other oil company. As a result, you can *safely* get maximum life from every Mobil product. **At the G & L and Hypro division Mobil quality oils are repeatedly filtered and put back to work. Periodic checks by Mobil laboratory analyses show oils to be in "like new" condition even after years of service.**



Thorough knowledge of machine design—Mobil engineers work closely with designers and builders . . . advise on hydraulic and lubrication system design . . . suggest the correct products for each machine. **G & L affixes a lubrication plate to every machine they produce. It specifies the use of the right Mobil product (or equivalent quality) to assure satisfactory operation wherever these machines are used.**

In-plant training clinics are conducted by Mobil engineers. Maintenance personnel are instructed in proper application procedures . . . taught to recognize trouble before it occurs. **At G & L, frequent electric motor failures were found to be caused by over-application of grease. Instruction corrected this trouble . . . reduced application time by 66% . . . cut grease consumption, too.**

Correct Lubrication

A proved program to reduce maintenance costs

SOCONY MOBIL OIL COMPANY, INC., and Affiliates: MAGNOLIA PETROLEUM CO., GENERAL PETROLEUM CORP., MOBIL OVERSEAS OIL CO., INC.

HIT PRODUCTION

MASS-PRODUCED PERFECTION stands behind the championship performance of High Standard Target Pistols. Uniform-quality Republic Cold Finished Bars help keep production aims on-target. Their predictable characteristics provide year-in, year-out product superiority.

REPUBLIC

REPUBLIC STEEL

World's Widest Range of Standard Steels

TARGETS ON THE NOSE

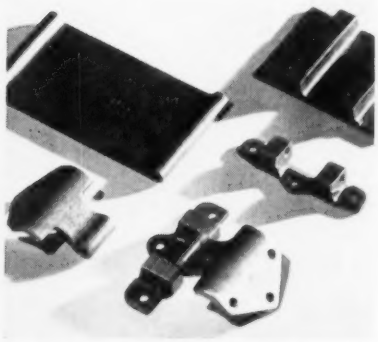
with Republic Cold Finished Steel Bars

Whatever your machined steel parts production target —greater feeds and speeds, longer tool life, better surface finish, higher strength, increased over-all economy —you'll score more bull's-eyes by using consistent, top-quality Republic Cold Finished Steel Bars.

Take the high-accuracy, .22-caliber target pistol shown on the opposite page, for example. Made by the High Standard Manufacturing Corporation, Hamden, Connecticut, it represents the ultimate in target pistol performance, winning honors in championship matches throughout the world. High Standard can afford no less than the best in craftsmanship and materials to protect their enviable reputation. Republic Cold Finished Steel Bars used for barrel stock in these pistols and other High Standard firearms, meet their most exacting specifications with flying colors.

The many advantages of Republic Cold Finished Bars have helped machined parts manufacturers in every field to zero-in on tough production problems. Their bright, smooth finish, plus extreme size-and-shape accuracy, enable machining operations to be held to a minimum—or, in some cases, to be eliminated entirely. In addition, the cold drawing process increases the machinability and physical properties of any given hot rolled analysis. Higher ultimate strength, yield point, and hardness provide product-design-and-performance benefits.

It will pay you to get the complete story on Republic Cold Finished Steel Bars in relation to your production targets. Simply call your local Republic representative or steel warehouse. Mail coupon for literature.



YOU CAN SCORE SAVINGS on many expensive-to-machine parts by taking full advantage of Republic Special Sections. Hot or cold pre-forming eliminates excess metal, reduces required finishing operations, cuts scrap to the bone. Special Sections are available in all grades of carbon, alloy and ENDURO Stainless Steel. Mail coupon for complete information.

ZERO-IN ON CORROSION and machining problems with Republic Cold Finished ENDURO® Stainless Steel Bars. ENDURO is solid—requires no applied surface to crack, flake, peel or wear away. Parts are corrosion-protected, permanently. In addition, cold drawing increases the inherent great strength and high machinability of ENDURO Stainless Steel. For information, mail coupon.

HIGH STRENGTH-TO-WEIGHT GOALS for mobile products like this steel pleasure cruiser are met with Republic High Strength Steel. Weight savings up to 30% can be made, with no sacrifice of safety or service life. Further, corrosion resistance of Republic high strength is many times that of ordinary carbon steel. Send coupon for facts.

STEEL

and Steel Products

REPUBLIC STEEL CORPORATION
DEPT. C-3818
3104 EAST 45th STREET, CLEVELAND 27, OHIO

Please send me information on:

☐ Cold Finished Steel Bars
☐ High Strength Steel
☐ Special Sections
☐ Cold Finished ENDURO Stainless Steel Bars

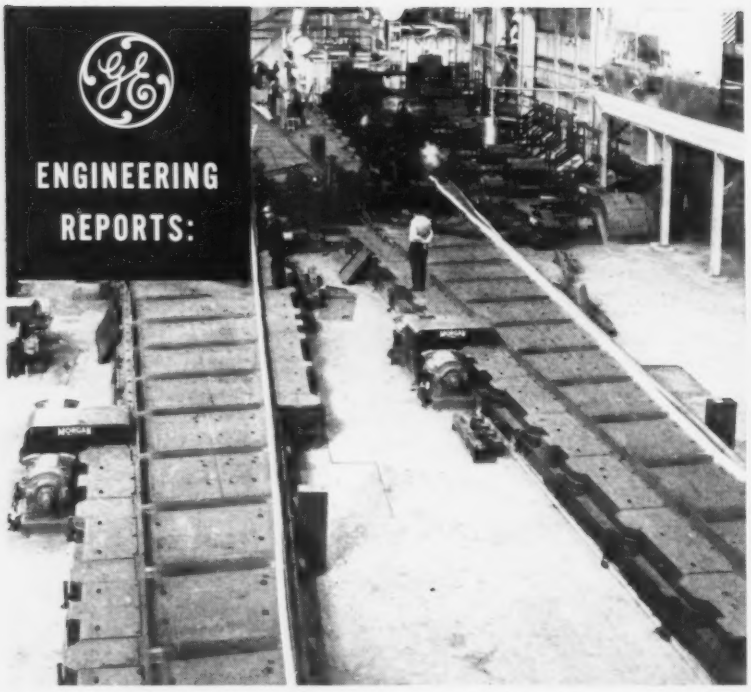
Name_____ Title_____

Company_____

Address_____

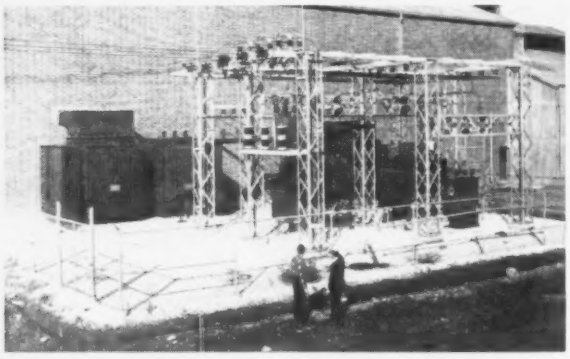
City_____ Zone____ State_____

ENGINEERING REPORTS:

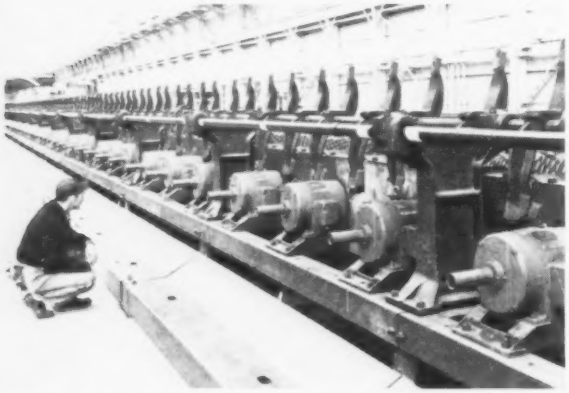


ONE OF THE FASTEST combination mills in existence, Atlantic Steel's new mill produces both rod and merchant products. Above is view of mill with skew "Y" tables in foreground.

AT ATLANTIC STEEL: pulling in

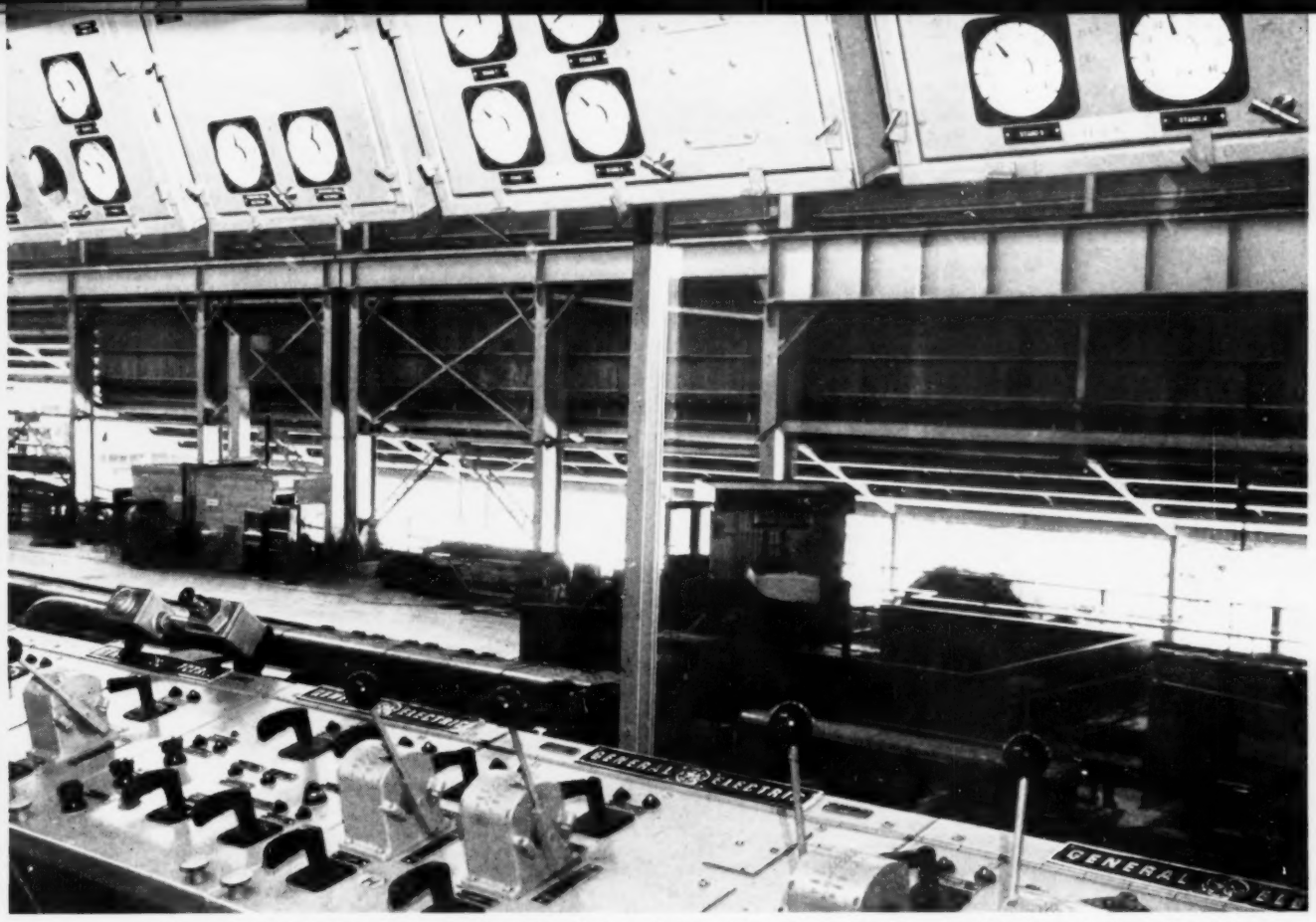


LOAD RATIO CONTROL provides best power factor, eliminates need to shut down mill to change voltage level. Rectifier regulating transformers and power circuit breakers are part of all General Electric outdoor package substation.



EASY REMOVAL of motors is facilitated by individual plug type connectors for each of 123 Tri-Clad* '55' 1-hp, adjustable frequency, a-c motors installed on cooling bed runout table.

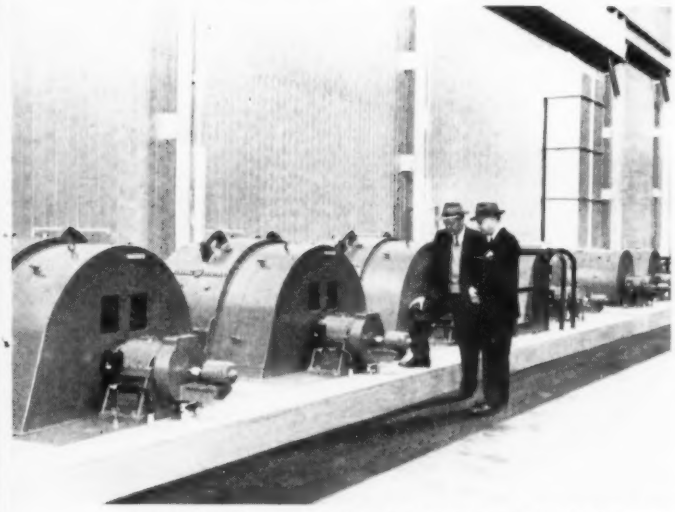
HIGH EFFICIENCY power supply is provided by these 1500-kw and 3500-kw mercury arc rectifier unit substations. Package construction provides lower installation cost, greater safety.



CENTRALIZED OPERATOR'S CONTROL of the mill is carried out from this air conditioned pulpit, located above the mill floor.

New drive system reduces buckling and one of world's fastest combination mills

General Electric's new speed regulators also shorten rescheduling time



ATLANTIC VICE PRESIDENT of Operations J. H. Girdler and General Electric Sales Engineer R. P. Crockett inspect General Electric main-drive motors totalling 8450 horsepower.

The Atlantic Steel Company's new combination merchant bar and rod mill, powered by a General Electric co-ordinated drive system, is the South's newest and most modern rolling mill. Its maximum delivery speed of 5000 fpm for rods and 2000 fpm for merchant products makes it one of the world's fastest combination mills.

THE DRIVE SYSTEM has standard mill motors with new amplistat-amplidyne regulator designed to hold 0.25% steady-state speed error from no-load to full-load. The regulating system makes it possible to set no-load speed essentially equal to rolling speed for fast set-up and re-scheduling. In addition, the system provides faster response to reduce over- and underfeed due to impact speed drop.

THIS MODERN, NEW MILL DRIVE system was the result of close co-operation between Atlantic Steel personnel, The Morgan Construction Co., Rust Engineering Co., and G-E engineers. *G-E engineers are also ready to work with you and your consultants to help meet production requirements. Get complete information from your nearest Apparatus Sales Office.* General Electric Co., Section 659-116, Schenectady, New York. *Registered trade-mark of General Electric Company

Engineered Electrical Systems for the Steel Industry

GENERAL ELECTRIC

Here N-A-X FINEGRAIN steel proves its versatility, forming readily under the deep-drawing operation that pressure cylinder manufacturing requires. For 20-lb. cylinders, .086" N-A-X FINEGRAIN blanks, 21 1/4" in diameter, become 12" in diameter and 7 1/2" in depth after the drawing operation. Steel Cooperage Division produces cylinders up to 425-pound capacity.

Submerged arc welding operation joins the two cylinder sections together. N-A-X FINEGRAIN again demonstrates its weldability under any process.

Here cylinder pressure capacities are tested hydrostatically at 480 lbs. psi, after the fittings have been added. Final burst pressure—1650 lbs. psi.

Finished product on the job. This cylinder, meeting all specifications of I.C.C. code, Section 4BA, contains liquefied petroleum for materials handling truck.

For whatever you make . . .

N-A-X® FINEGRAIN STEEL

BUILDS IN STRENGTH WITH LIGHT WEIGHT

A significant example of the strength, formability and weldability of N-A-X FINEGRAIN steel is to be found in the manufacture of liquefied petroleum gas cylinders by Steel Cooperage Division of the Serrick Corporation, Detroit.

These lightweight LP-Gas cylinders must be able to withstand high internal pressures. Therefore, the steel used in their manufacture must have a minimum yield strength of 50,000 pounds per square inch and a tensile strength of 70,000 pounds per square inch, in order to meet the requirements of Section 4BA of the I.C.C. specifications.

On this job, as with so many others, N-A-X FINEGRAIN steel resulted in lighter weight, without sacrifice of strength and safety.

Check these important advantages for your job: N-A-X FINEGRAIN steel, compared with carbon steel, is 50% stronger • has high fatigue life with great toughness • is stable against aging • has greater resistance to wear and abrasion • is readily welded by any process • offers greater paint adhesion • polishes to a high luster at minimum cost. And the physical properties of N-A-X FINEGRAIN are inherent in the "as rolled" condition. N-A-X FINEGRAIN'S resistance to normal atmospheric corrosion is twice that of carbon structural steel. NOTE: Where greater resistance to extreme atmospheric corrosion is an important factor, our N-A-X HIGH-TENSILE is recommended.

For whatever you make, from pressure cylinders to tractors, with N-A-X HIGH-STRENGTH steels you can design longer life, and/or less weight, and economy, into your products. Let us show you how.

N-A-X HIGH-STRENGTH STEELS

N-A-X Alloy Division, Dept. A-5

GREAT LAKES STEEL CORPORATION

Detroit 29, Michigan • Division of

NATIONAL STEEL CORPORATION

N-A-X Alloy Div., Dept. A-5

Great Lakes Steel Corp., Detroit 29, Michigan

☐ Please send me technical data on N-A-X FINEGRAIN steel.

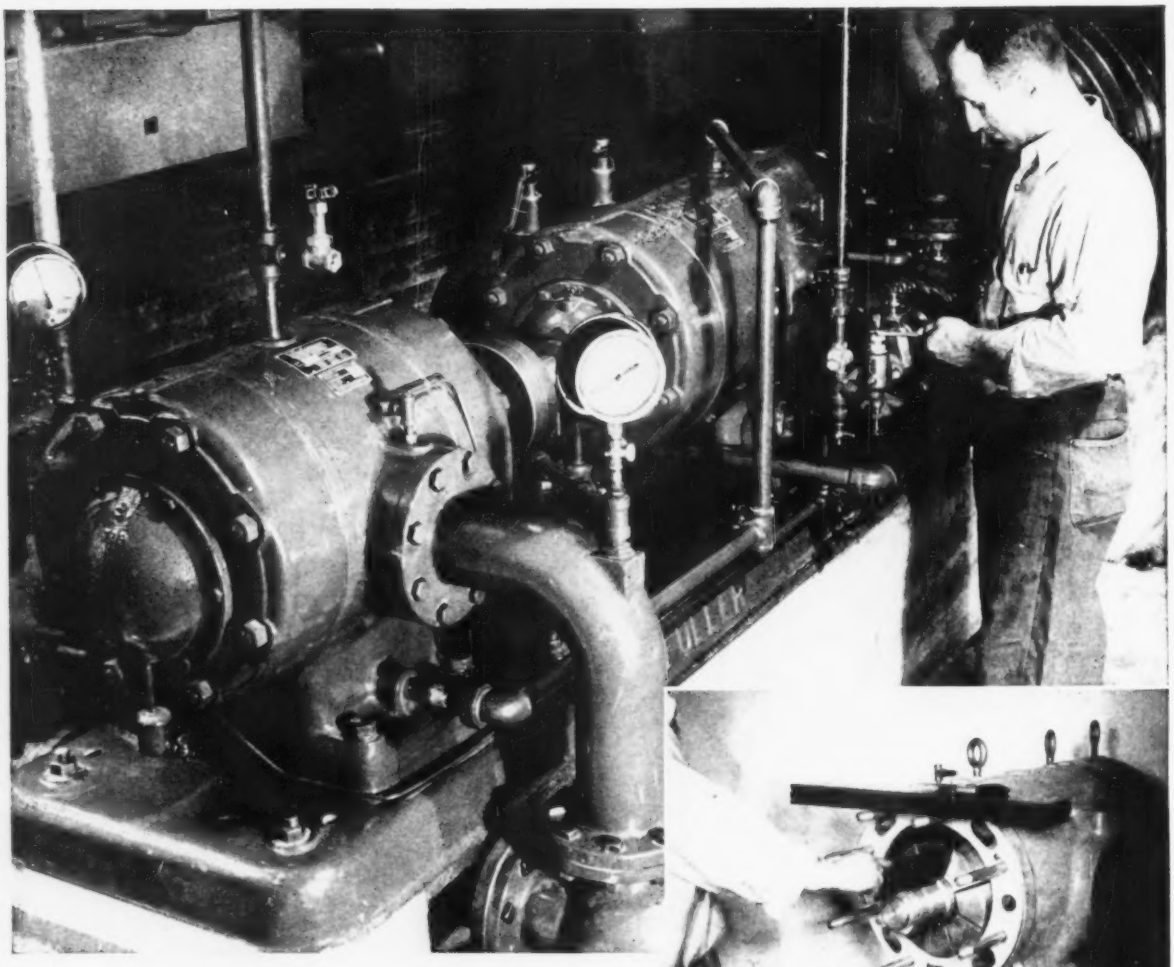
☐ Please have your representative contact me.

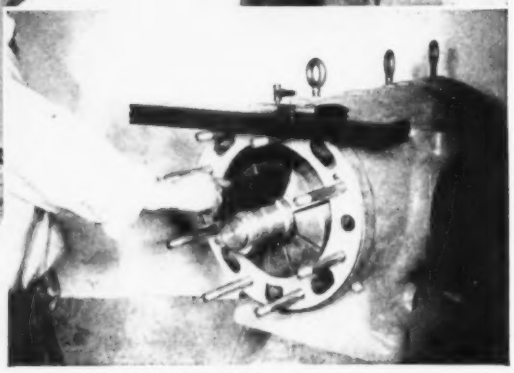
Name_____ Title_____

Company_____

Street_____

City_____ Zone____ State_____





Blade inspection

PERFECT COMBINATION OF MEN AND MACHINES

Providing plant air for varied uses imposes heavy responsibility on both the compressor and its operator to keep production moving.

The simplicity of the Fuller Rotary Compressor principle reduces maintenance to an absolute minimum; by the same token, operator's universal pride in Fuller Rotary performance contributes to longer life of the compressor. Few moving parts and smooth operation limit the operator's work to periodic inspection.

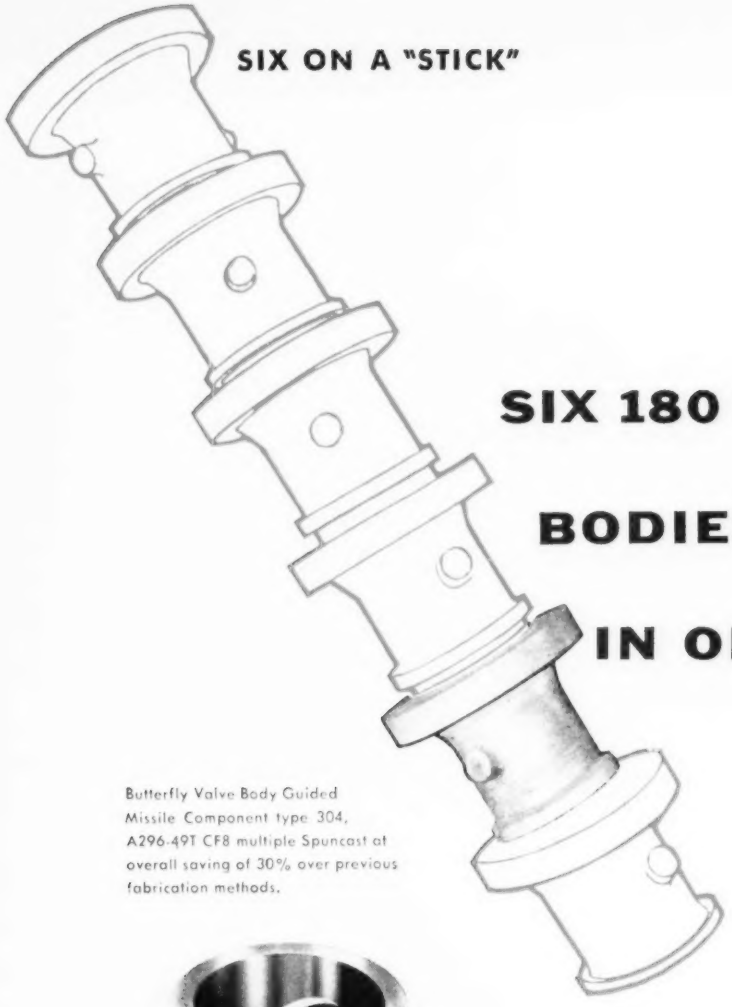
This perfect combination of men and machines is worth investigating, with an eye to economies you, too, can enjoy. Write to Fuller Company, compressor sales department for detailed information.

FULLER COMPANY
122 Bridge St., Catasauqua, Pa.
SUBSIDIARY OF GENERAL AMERICAN TRANSPORTATION CORPORATION
Birmingham · Chicago · Kansas City · Los Angeles · San Francisco · Seattle

C-316
4686

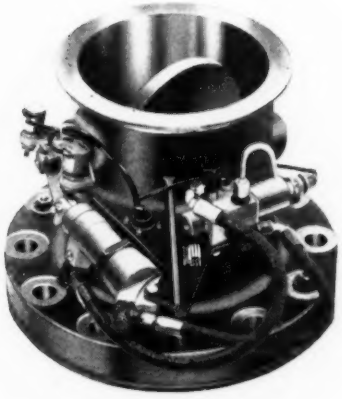
PIONEERS OF HIGH-EFFICIENCY VANE TYPE ROTARY COMPRESSORS SINCE 1930

SIX ON A "STICK"



SIX 180 LB. VALVE BODIES SPUNCAST® IN ONE PIECE

Butterfly Valve Body Guided Missile Component type 304, A296-49T CF8 multiple Spuncast at overall saving of 30% over previous fabrication methods.



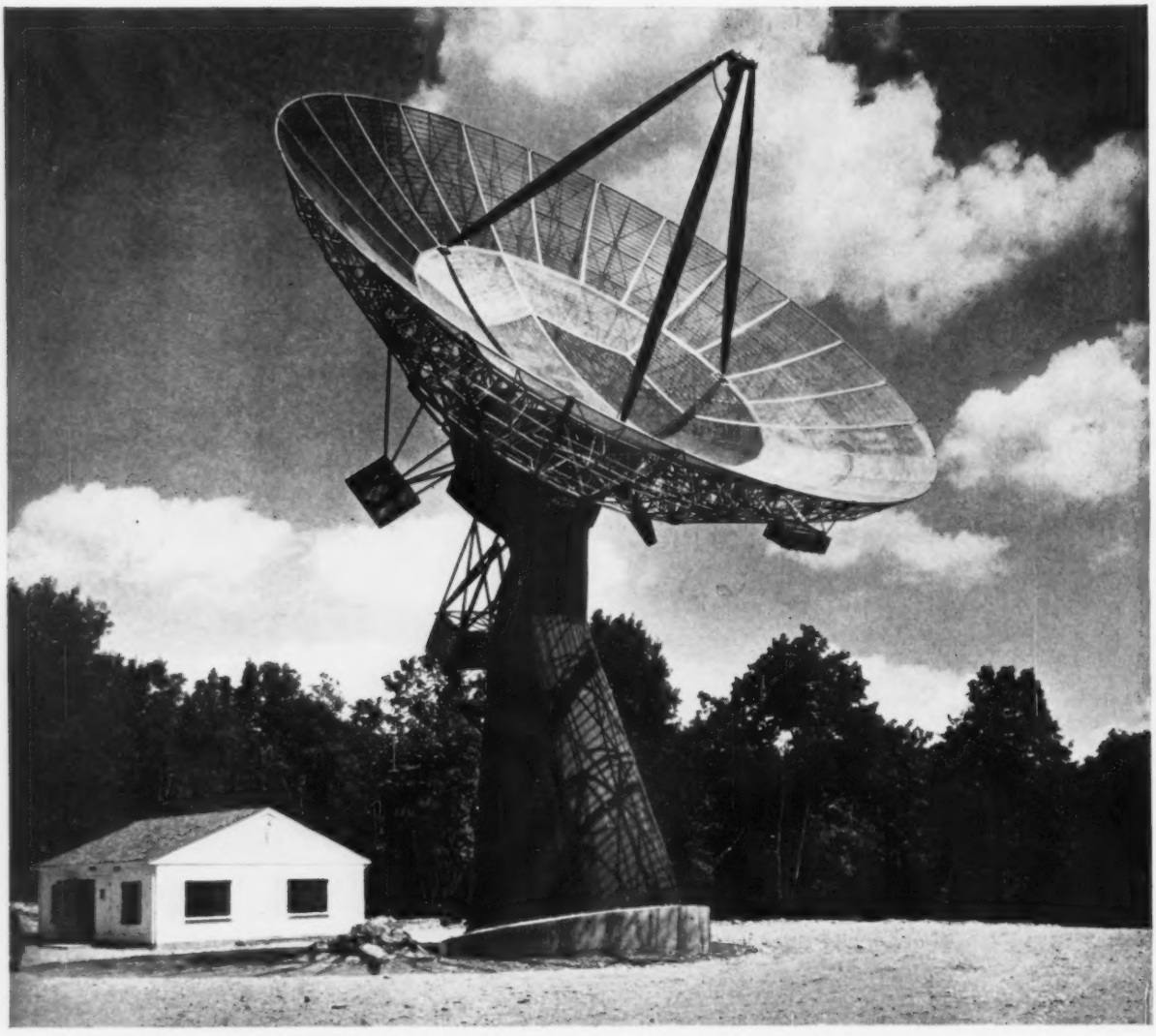
Here's an opportunity to take advantage of one of the most cost saving techniques in modern casting practice—*ESCO* Spuncast Multiple Casting. You can cut fabrication and machining time to a minimum, save on material costs with definite improvement in quality.

Whether your problem is one of heat, corrosion, impact, abrasion or alloy availability, the *ESCO* engineering staff will help you plan for greater savings in time, material and money with *ESCO* SPUNCAST.

ESCO

ELECTRIC STEEL FOUNDRY COMPANY

2184 N. W. 25TH AVE. • PORTLAND 10, OREGON
MFG. PLANTS AT PORTLAND, ORE. AND DANVILLE, ILL.
Offices in Most Principal Cities
ESCO INTERNATIONAL, NEW YORK, N. Y.
IN CANADA ESCO LIMITED



What a radio telescope can tell you about expanded aluminum

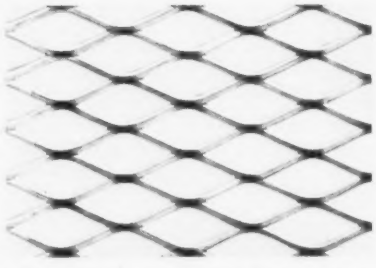
In designing Harvard University's new 60-foot radio telescope, the D. S. Kennedy & Co. found many advantages in Penmetal expanded aluminum. These include . . .

Openings of just the right size: Small enough to present an effectively solid surface to the radio signals; large enough to minimize wind resistance.

Corrosion resistance: To provide 'round-the-clock weather protection.

Inherent structural strength, which helps to prevent distortion with movement of the reflector, and reduces the bracing required.

Light weight: As the mesh covers the entire area of the reflector, the fact that it weighs only a fraction



of a pound per square foot was an important consideration.

Low cost, which enabled the large area to be covered economically.

Easy fabrication with standard tools.

These same characteristics have made Penmetal expanded aluminum the choice for a wide variety of applications. It is available in a number of different mesh sizes to suit almost any requirement.

Write for descriptive folder. Ask for a copy of 507EM.

PENN METAL COMPANY, INC.

General Sales Office:
40 Central Street, Boston 9, Mass.
Plant: Parkersburg, W. Va.
District Sales Offices: Boston, New York, Philadelphia, Pittsburgh, Detroit, St. Louis, Dallas, Little Rock, Seattle, San Francisco, Los Angeles, Parkersburg

Penmetal

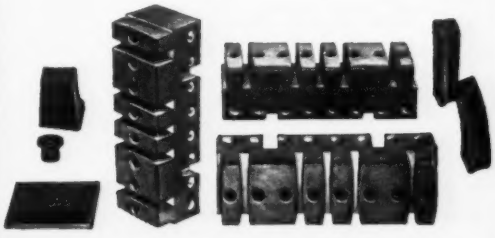
PM-143

B&W Silicon Carbide Refractories for metal-working furnaces

To meet the specialized requirements of the primary metals industry, B&W manufactures Silicon Carbide Refractories in a variety of shapes and sizes. These durable refractories are produced in B&W's Augusta, Ga., works to the same rigid quality control standards used in making all B&W Refractories. See your local B&W Refractories Engineer for further information.

B&W Silicon Carbide Rolls

B&W Silicon Carbide Recuperator Tubes



B&W Silicon Carbide Special Shapes

BABCOCK & WILCOX

THE BABCOCK & WILCOX CO.
REFRACTORIES DIVISION
GENERAL OFFICES: 161 EAST 42nd ST., NEW YORK 17, N.Y.
WORKS: AUGUSTA, GA.

B&W REFRACTORIES PRODUCTS: B&W Allmul Firebrick • B&W 80 Firebrick • B&W Junior Firebrick • B&W Insulating Firebrick • B&W Refractory Castables, Plastics and Mortars • B&W Silicon Carbide

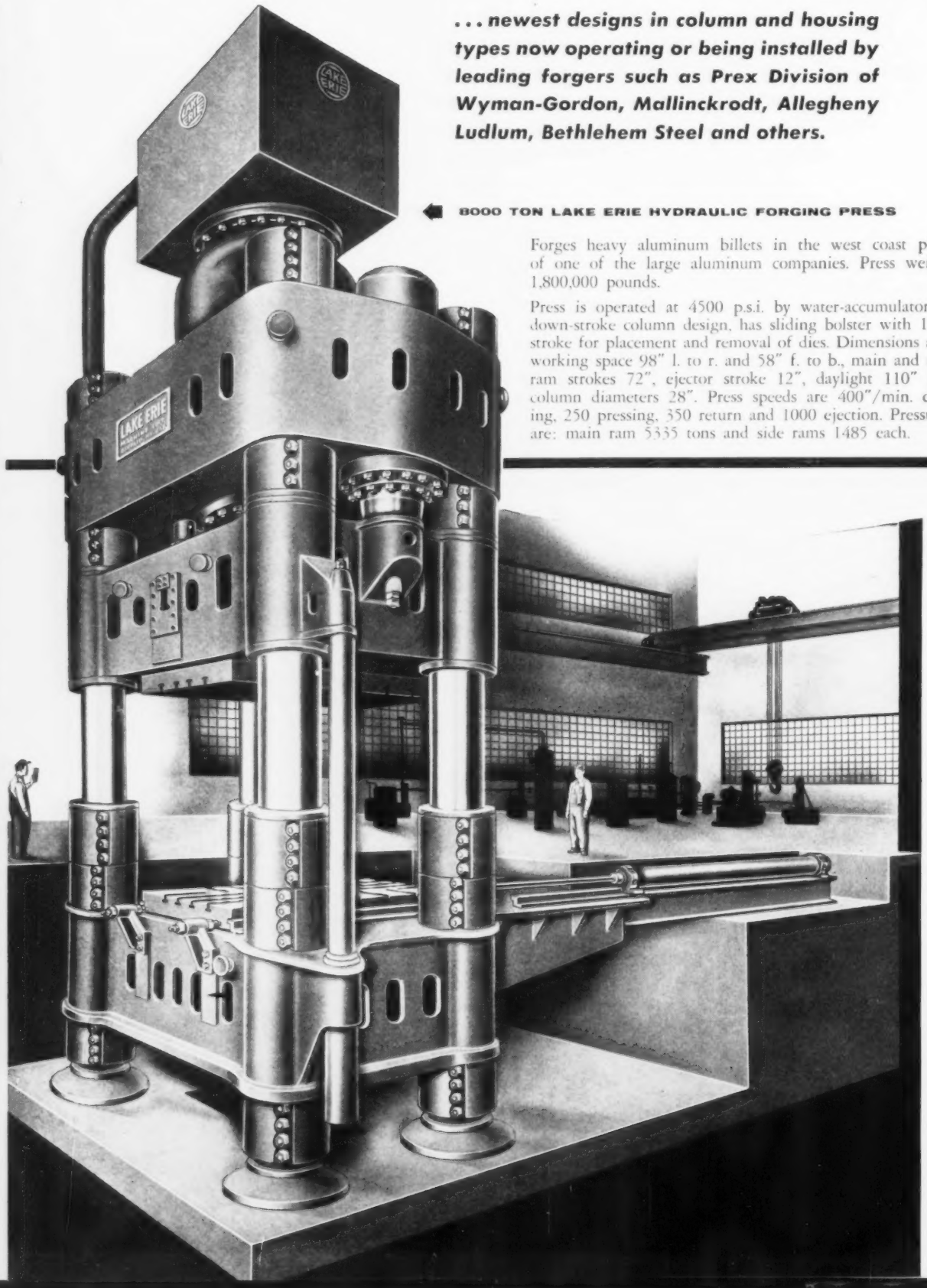
FORGING PRESSES...

...newest designs in column and housing types now operating or being installed by leading forgers such as Prex Division of Wyman-Gordon, Mallinckrodt, Allegheny Ludlum, Bethlehem Steel and others.

8000 TON LAKE ERIE HYDRAULIC FORGING PRESS

Forges heavy aluminum billets in the west coast plant of one of the large aluminum companies. Press weighs 1,800,000 pounds.

Press is operated at 4500 p.s.i. by water-accumulator, is down-stroke column design, has sliding bolster with 112" stroke for placement and removal of dies. Dimensions are: working space 98" l. to r. and 58" f. to b., main and side ram strokes 72", ejector stroke 12", daylight 110" and column diameters 28". Press speeds are 400"/min. closing, 250 pressing, 350 return and 1000 ejection. Pressures are: main ram 5335 tons and side rams 1485 each.



..by LAKE ERIE

LAKE ERIE FORGING PRESSES include self-contained and water accumulator types, and ferrous and non-ferrous models for no-draft, closed die and open die forging. They are available in 3 cylinder designs for planishing.

LAKE ERIE FORGING PRESSES feature inserted forged steel cylinders, tie rods pre-stressed to 150% of press tonnage, chrome plated rams, platens designed for eccentric loading, a prefill system and a unique valving design that permit the highest forging speeds.

LAKE ERIE MACHINERY CORPORATION, *successor to*

LAKE ERIE ENGINEERING CORP.

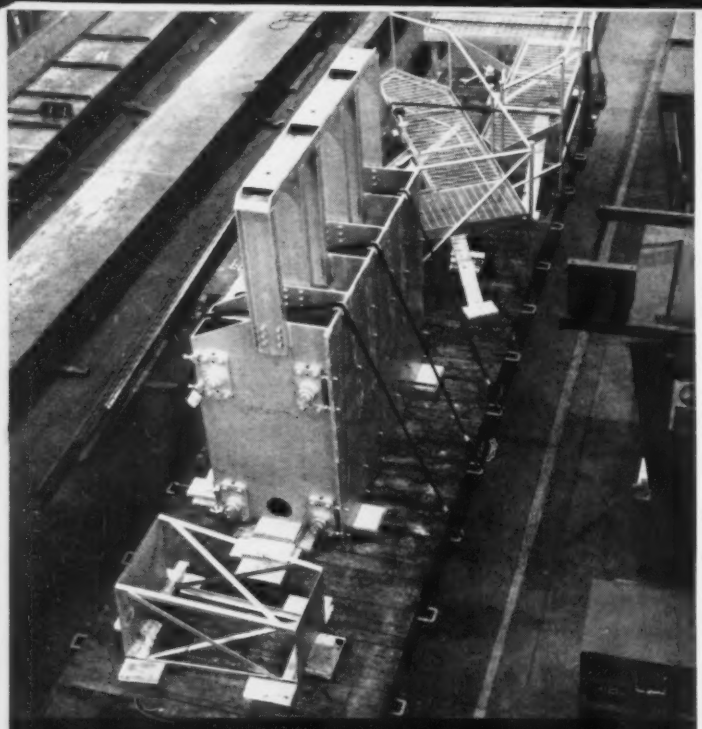
368 Woodward Avenue, Buffalo 17, New York

Manufacturers of the Most Complete Line of Hydraulic Presses for All Industry.

4000 TON LAKE ERIE HYDRAULIC FORGING PRESS

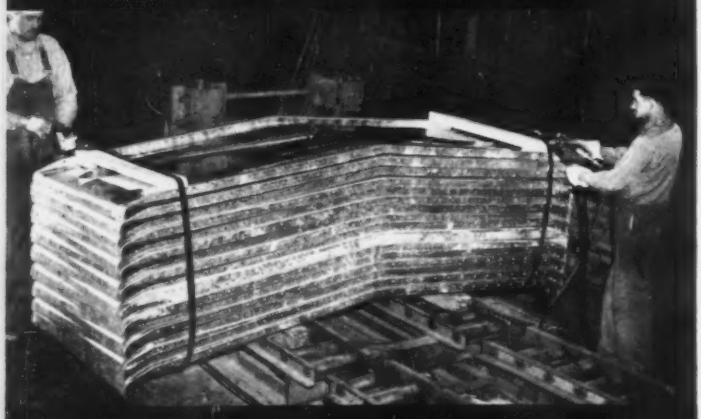
One of two such presses in the same west coast plant used to open-forge heavy aluminum billets. Press weighs 1,230,000 pounds.

Press is accumulator operated at 4500 p.s.i. water pressure. Sliding bolster with 105" stroke inserts and removes dies. Working area is 90" r. to l. and 70" f. to b. Daylight is 90", shut height is 45". Main ram stroke is 45", horizontal side rams 24" each, ejector in bed 12". Main ram closes and returns at 600"/min. and applies 4000 tons pressure at 300"/min. Each side ram closes at 400"/min. and presses 1985 tons.



ACME STEEL **STEEL STRAPPING** secures and protects electric furnace for shipment by flat car. *(Idea No. U2-3)*

ACME STEEL **STEEL STRAPPING** unitizes aluminum ingots for better handling and storage. *(Idea No. U6-16)*



ACME STEEL **STEEL STRAPPING** unitizes steel stampings for easier handling and shipping. *(Idea No. U6-20)*

AIM* for better handling, protection, storage

You can gain important materials handling, protection and storage advantages by applying Acme Steel unitizing and carload bracing Ideas to your operations. Safe, secure packages and shipments result in increased handling speed and labor-materials economies, bringing you important savings and greater customer satisfaction. It's easy to find out how.

Located near your plant is an Acme Idea Man thoroughly experienced in product protection for the primary and fabricated metals industries. He is immediately available to discuss your specific problems and provide hundreds of performance-proved Acme Steel Strapping Ideas, without cost or obligation. The seven Ideas on these pages are included among the Ideas-In-Action Reports your Acme Idea Man will be glad to show you. Among these many Reports—all of which have been developed from actual experiences of dozens of industries—are certain to be Ideas that can be applied to your problems, for better, faster, more economical product handling, protection and storage.

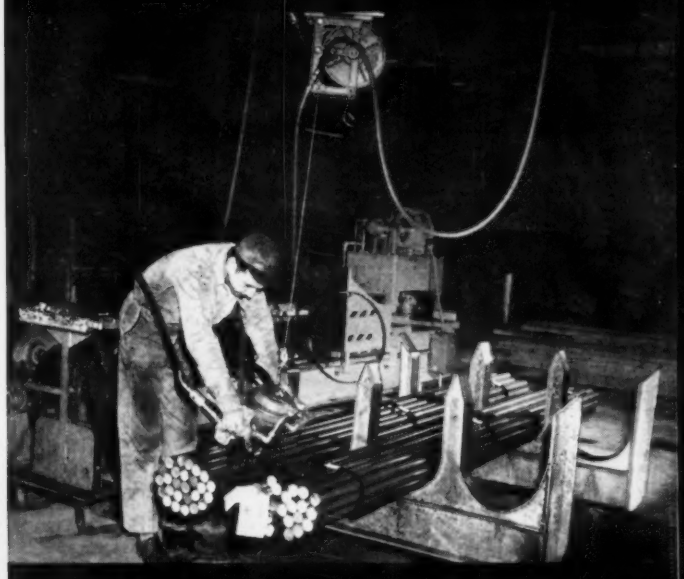
Your *Acme Idea Man can be contacted at the nearest Acme Steel Company office. Simply look under "Steel Strapping" in your classified telephone directory, or send the coupon for full facts and information.

ACME STEEL **STEEL STRAPPING**

ACME STEEL **STEEL STRAPPING** braces loads of wire fencing for safe, secure shipment in gondola cars. *(Idea No. U3-1)*

ACME STEEL **STEEL STRAPPING** machine bundles boxes of kitchen utensils for easier handling. *(Idea No. 52-14)*

ACME STEEL **STEEL STRAPPING** palletizes heavy wheel and brake assemblies for fast, mechanical handling. *(Idea No. U6-19)*



ACME STEEL **STEEL STRAPPING** applied with pneumatic tools speeds unitizing of cold-drawn steel bars. *(Idea No. U6-18)*

2 IDEA BOOKS

These two information packed Acme Steel Idea Books are available to you on request. They will provide dozens of clues to better ways to package and protect your products and plant output.

Write today for your choice of the above two Acme Steel Idea Books. Merely indicate the books you want on the coupon at the right and mail. Your request will be filled promptly, with no obligation.

Acme Steel Products Division
ACME STEEL COMPANY, Dept. IFU-87
Chicago 27, Illinois

Please send me the new Acme Steel Idea Books I have checked below:

☐ Steel Strapping Catalog ☐ Unitizing Catalog
☐ Have an Acme Idea Man call.

Name_____

Title_____

Company_____

Address_____

City_____ Zone____ State_____

Sustained operating temperatures up to 400° F, as in guided missiles, are death to inferior electrical insulations and laminates. CDF glass-base laminates of Teflon*—the only laminates of their kind approved by the military—can take this punishment steadily.

LATEST HIGH-HEAT INSULATION SYSTEMS NEED CDF GLASS-BASE LAMINATES AND TAPES

Widest available range offers Teflon, epoxy, silicone, mica products for dimensional stability under continuous heat

As components and equipment grow smaller, and heat becomes more difficult to dissipate, CDF high-heat electrical insulations become increasingly important to electronic design. For nowhere else can such a wide range of quality insulations be found under one roof as at CDF.

FOR HIGH-HEAT PRINTED CIRCUITRY, CDF glass-base metal-clad laminates of Teflon* and epoxy exhibit best dimensional stability and current-carrying capacity. Constant operating temperatures of 300°F — soldering temperatures to 500°F — are readily met by these specialized CDF Dilecto® laminates.

HIGH-HEAT FLEXIBLE INSULATIONS. CDF offers a wide choice of insulating tapes made of Teflon, silicone varnish, silicone rubber, and Micabond®, with glass-cloth support. CDF tapes may be used either by hand wrapping or on automatic winding machines. Unsupported Teflon in colors available to meet MIL-STD 104.

TEFLON SPAGHETTI TUBING AND OTHER SPECIALTIES. Part of CDF's vast fabrication facilities is devoted to the production of custom parts from Teflon — spaghetti tubing, rods, sheets, and machined parts to rigid specifications.

NEW — *cementable* Teflon, bondable to itself and to other materials with commercial adhesives.

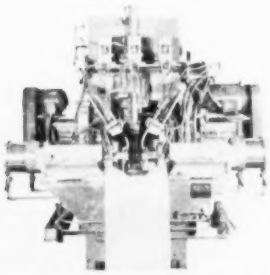
SEE SWEET'S Product Design File, Electronics Buyers' Guide, and other directories for the name and phone number of your CDF sales engineer. Then send your print or your problem, and we'll return specific technical data and test samples.

*trademark of DuPont tetrafluoroethylene resin

CONTINENTAL-DIAMOND FIBRE

A SUBSIDIARY OF THE Budd COMPANY • NEWARK 85, DEL.

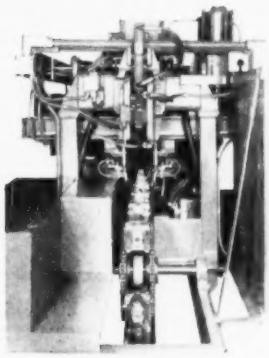
Entry end of line



Federal

PACKAGED PRODUCTION LINE

Automates Pedal Bracket Manufacture for Dodge!



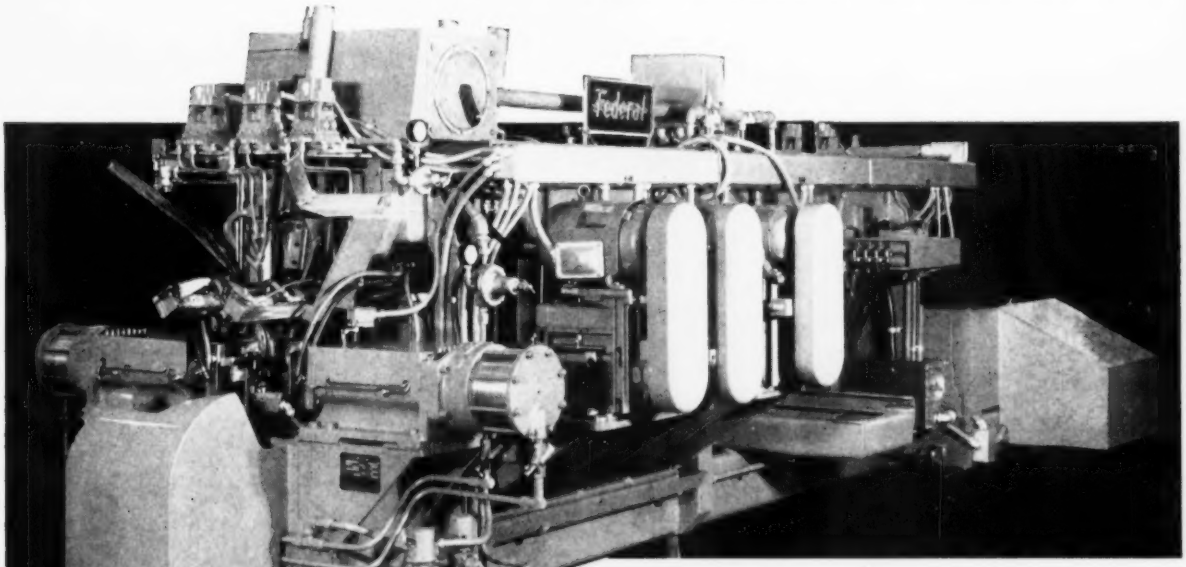
Exit end of line

SINGLE LINE AUTOMATICALLY FEEDS, SPOT FACES, REAMS, DE-BURRS, WELDS TO SPEED PRODUCTION, CONTROL UNIFORMITY OF PEDAL PART

The Dodge Division of the Chrysler Corporation recently set into operation a single Federal machine that performs manufacturing functions normally requiring many separate pieces of equipment. In the fabrication of automotive pedal brackets this Federal "Packaged Production Line" was made to feed and weld two pads to the bracket, spot face one pad, ream and de-burr holes in each pad, feed and weld six mounting bolts and eject the finished piece at a rate of 775 units per hour.

The combining of several manufacturing operations into one has many natural advantages. It means one source responsibility, reduced floor space, and handling requirements, equipment economies and greater product uniformity.

Don't overlook these benefits—talk with Federal—a pioneer in the development and manufacture of "Packaged Production Lines."



Components of pedal bracket prior to "automatic" assembly

Finished pedal bracket

Federal® WELDERS

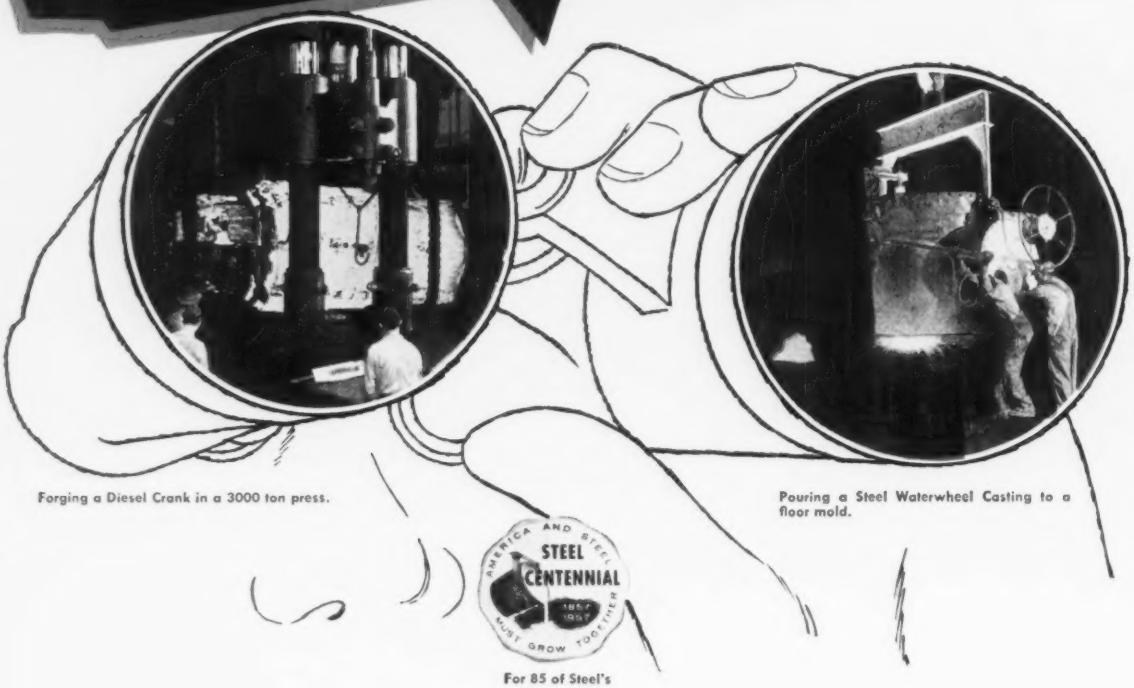
Warco® PRESSES

The Federal Machine and Welder Company

225

WARREN, OHIO

TAKE A CLOSER LOOK AT ERIE FORGE & STEEL CORPORATION



Forging a Diesel Crank in a 3000 ton press.

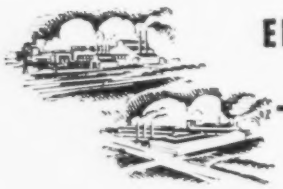
Pouring a Steel Waterwheel Casting to a floor mold.

For 85 of Steel's 100 years.

STEEL FORGINGS . . . Ingots up to 90 inches in diameter weighing 200,000 pounds are forged on presses ranging from 1500 to 3000 tons here. The steel is made here. Heat treating and machining are completed here. The finished product on shipping dock may be a giant turbine rotor shaft, the world's largest diesel crank, a ship's drive shaft, an engine connecting rod, or a component for an industrial machine . . . or any one of a thousand industrial forgings. From engineering design, metallurgical quality control, production to finished product, it's done under "One Responsibility and One Control."

STEEL CASTINGS . . . One piece castings from a few pounds to 300,000 pounds are poured from steel we make here. They show up as components for Hydro-Electric Turbines, Steam Hammers, Rolling Mills, Cement Mills, Steam Turbines, Crushers, and as components for the world's leading makers of industrial production machines. Assemblies of steel castings and forgings are completed here for electric furnaces, ships' unloaders, hydraulic presses, transport equipment bearing names you know at a glance.

You can be *sure* when you place your steel forging, ingot and casting requirements with us.

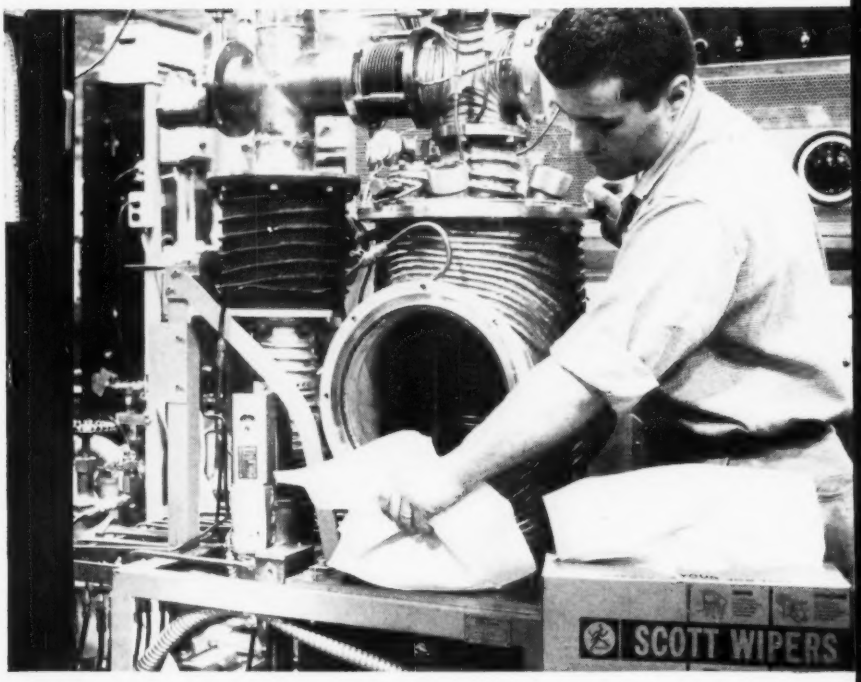


ERIE FORGE & STEEL CORPORATION

ERIE, PENNSYLVANIA

MEMBER AMERICAN IRON AND STEEL INSTITUTE

ERIE FORGE & STEEL CORPORATION



Scott Wipers are 2-ply paper of exceptionally high wet strength. They're Perf-embossed.® This specially processed surface—lint-free and highly absorbent—makes them ideal for cleaning this Westinghouse vacuum pulling crystal furnace, and other similarly demanding jobs!

WIPER PROBLEM? Look what Westinghouse did with Scott Wipers!

A major operation at Westinghouse's Youngwood, Pa. plant is the growing of silicon crystals. A silicon seed is immersed in liquid silicon, grown to desired size in a vacuum pulling furnace, then sliced into discs. Scott Wipers* have been in use here for nearly two years.

In this purity-demanding plant, a clean wiper is required for *every* wiping application. For instance, the slightest trace of lint in the furnace would carbonize—become a contaminant which might affect the growing crystal. That's why lint-free Scott Wipers are used to clean the furnace *before* the crystal enters. Scott Wipers are always clean, fresh, sanitary, right out of the box!

This same soft, absorbent, lint-free freshness is important on other wiping jobs here, too: cleaning the machine which slices crystals by ultrasonic vibration . . . cleaning Lapmaster machines . . . and cleaning surface grinders. For more facts on Scott Wipers, call your local Scott distributor. Or write: Scott Paper Company, Department IA-78, Chester, Pennsylvania.

*Patent Pending

SCOTT PAPER

Maker of the famous Scott paper products you use in your home. Consult TV schedules for Scott's program, "Father Knows Best."

STRUCTURAL SHOP COMPLETELY COVERED WITH **TRANSFER CRANES**

... Eliminate Lost Time Waiting for Crane Service

... Enable Direct Fast Delivery Between Any Points in Shop

... Hoist Carriers Can Be Used Together or Separately in Accordance With Load Requirements

In this area are six motor driven 5 ton, 38' 0" span transfer cranes on two runways. Any crane on one runway may be interlocked with any crane on the other runway, permitting a hoist carrier to transfer from one to the other. Not only does this permit direct delivery of loads between any two points in the shop, it allows two hoist carriers on one crane to support both ends of a long truss when desired.

Along the wall at left three two ton, 12' 0" span hand propelled cranes with electric hoists handle beams in and out of a punching machine and spacing table.

A BIG factor in the rapid growth of Standard Iron & Steel Works, Limited, Toronto, Canada, is acknowledged to be their wide use of Cleveland Tramrail transfer cranes. This equipment makes possible a highly efficient operation, greatly speeds production and cuts costs.

Cleveland Tramrail equipment has been used at Standard Iron from their early days in the fabricating business. As the company has expanded, more Tramrail has been added. Today Standard Iron is one of the foremost companies in the Toronto area in the design, fabrication and erection of structural steel for buildings and bridges.

For live, aggressive companies like Standard Iron & Steel Works, Limited, Cleveland Tramrail has much to offer. It provides real help in the struggle with rapidly rising production costs. A nearby sales engineer will gladly give you details.

CLEVELAND TRAMRAIL

Overhead Materials Handling Equipment

CLEVELAND TRAMRAIL DIVISION • THE CLEVELAND CRANE & ENGINEERING CO. • 4817 E. 290 ST. • WICKLIFFE, OHIO

You don't have to shop around . . .

A-L Stainless Steel is produced in every form you may need

You ought to have a copy of our PUBLICATION LIST

This 8-page bulletin lists and describes all the current publications on the principal families of A-L Products: stainless and heat-resisting steels, tool and die steels, electrical steels and alloys, permanent magnet materials, and Carmet carbides. There is a handy order form for your convenience in getting the material you need: technical and fabricating data, information on applications and fields of utility, etc. *Write for your copy.*

ADDRESS DEPT. A-921

WHATEVER your stainless steel requirements may be, you can satisfy them with A-L Stainless.

It's produced in any grade, form or finish you want—from the finest wire to heavy plates, castings and forgings, including sheets, strip, bars, shapes, tubes —*everything!*

That's not only handy, but advantageous: one reliable source, one undivided responsibility, one well-known standard of quality and uniformity.

Complete technical and fabricating data —engineering help, too—are yours for the asking. Just keep it in mind to specify "A-L Stainless Steel" when you're in the market. And remember, wherever you use it, this time-tested stainless steel looks better, lasts longer, usually works out to cost you very much less in the long run. ***Allegheny Ludlum Steel Corporation, Oliver Building, Pittsburgh 22, Pa.***

For Stainless Steel in ALL Forms—call

Allegheny Ludlum

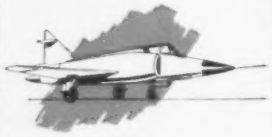
WRW 6008 A **Warehouse stocks carried by all Ryerson Steel plants**

AL STAINLESS STEEL

What's YOUR Roller Bearing Problem?

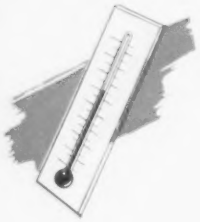
HYATT BUILDS AMERICA'S MOST COMPLETE LINE OF CYLINDRICAL ROLLER BEARINGS TO SOLVE IT BETTER!

HYATTS ARE DESIGNED:



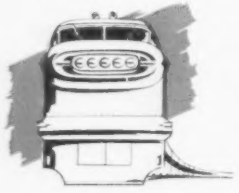
FOR SPEEDS UP TO 50,000 RPM

From bearings for slow-moving construction equipment to supersonic jet engines, Hyatt builds roller bearings to meet almost any speed requirements.



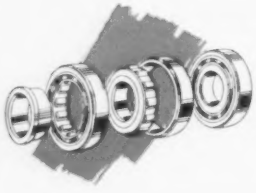
FOR TEMPERATURES FROM BELOW ZERO TO 450° F.

Conventional steels can be stabilized by heat treatment for operation up to 450° F. Beyond this we can provide special high-temperature steels for special needs.



FOR LOADS RANGING UP TO 103,000 POUNDS

From small bearings for lawn mowers to the huge heavy-duty types used in giant diesel locomotives, Hyatt builds bearings for every load requirement!



IN SIZES RANGING FROM ¾" OD TO 14" OD

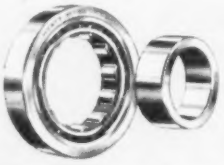
Hyatt offers a wide variety of bearing types and sizes. Each Hyatt Roller Bearing assures maximum life in each individual application.

Life, load, speed, temperature, shaft location—almost every roller bearing application problem you are likely to face has *already* been encountered by Hyatt engineers.

Armed with a complete line of bearings, they can usually come up with an answer to your particular design problem. In addition to competent design assistance, you can also depend upon the consistent high quality and uniformity of Hyatt Bearings.

HY-LOAD

High-capacity cylindrical roller bearings for heavy radial loads and light or intermittent thrust loads.

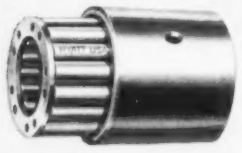


INDUSTRIAL INCH

Designed for slow-moving, heavily-loaded machinery where large-diameter shafts are usually employed.

TRUNNIONED ROLLER

For industrial trucks, textile machinery, gear pumps, conveyors, hoists and agricultural equipment.



WOUND ROLLER

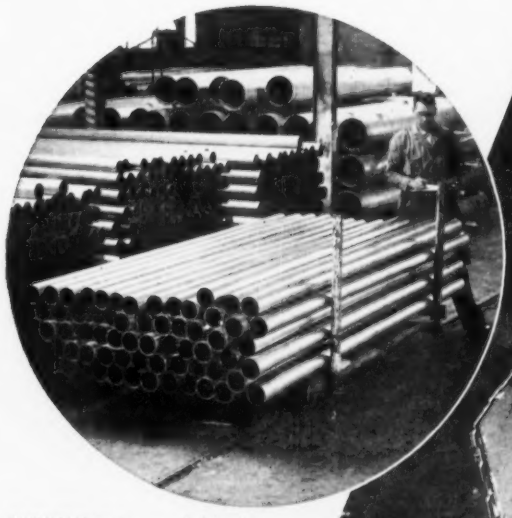
A three-part separable bearing, which provides maximum resistance to shock, abrasion and fatigue.

These are a few of the reasons why experienced design engineers have learned to reach for a Hyatt catalog. If you need the technical assistance of a sales engineer, call or write Hyatt Bearings Division, General Motors Corporation, Harrison, New Jersey, Pittsburgh, Chicago, Detroit, Oakland, Calif.

FOR REPLACEMENT BEARINGS,
SEE YOUR HYATT INDUSTRIAL BEARINGS DISTRIBUTOR

GM GENERAL MOTORS

HYATT HY-ROLL BEARINGS
FOR MODERN INDUSTRY



WELDCO is available in Stainless Steel, Monel, Inconel, Nickel, Cupro-Nickel, and Hastelloy, in tube and pipe sizes from 3" to 30", Schedules 5, 10 and 40.

WELDCO
WELDED TUBING

Used in All FORRESTAL-Class Carriers for Water Lines

Only the finest materials go into the production of Uncle Sam's fighting ships. In the Forrestal-Class Carriers, WELDCO Welded Cupro-Nickel Tubing was used for the water and flushing lines, because WELDCO is a quality Tubing. It's less expensive, too -- both the Navy and the shipbuilding industry have realized tremendous savings in various WELDCO applications.

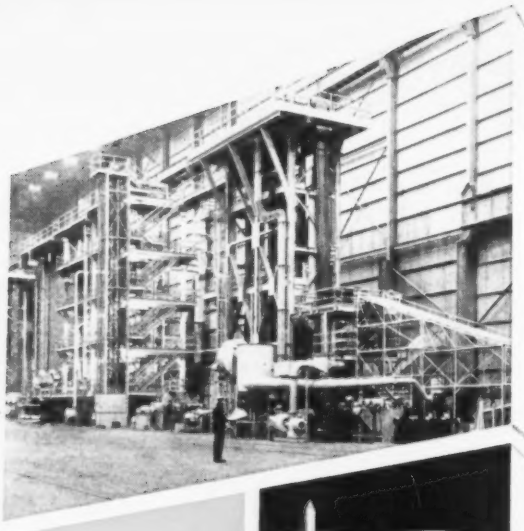
If you use Tubing, it will pay you to check the many uses and advantages of WELDCO Welded Tubing. Remember ---

WELDCO

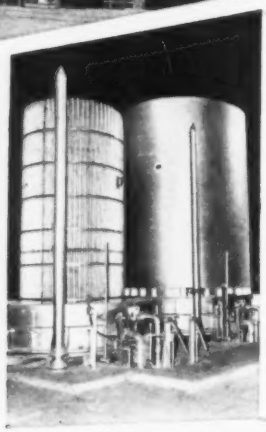
Photo Courtesy of Newport News Shipbuilding and Dry Dock Co.

Whatever Your Needs In Tubing...
You're 'Way Ahead With WELDCO

THE YOUNGSTOWN WELDING & ENGINEERING CO.
3721 OAKWOOD AVE. . . YOUNGSTOWN, OHIO



VERTICAL STRIP ANNEALER

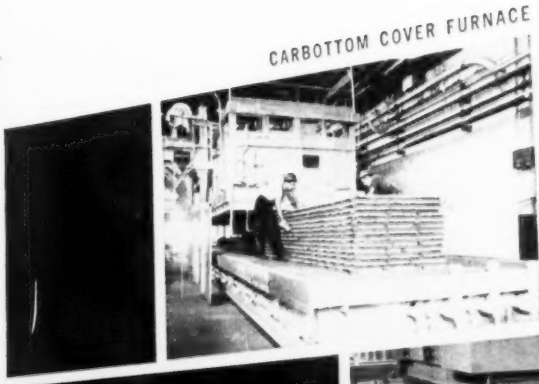


SINGLE-STAND ANNEALERS

CONTINUOUS STRIP GALVANIZER

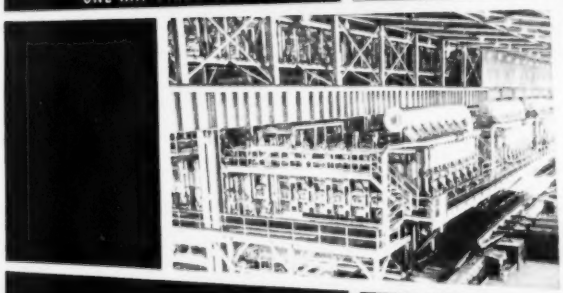
MULTIPLE-STAND ANNEALERS

foundation for steel mill profits

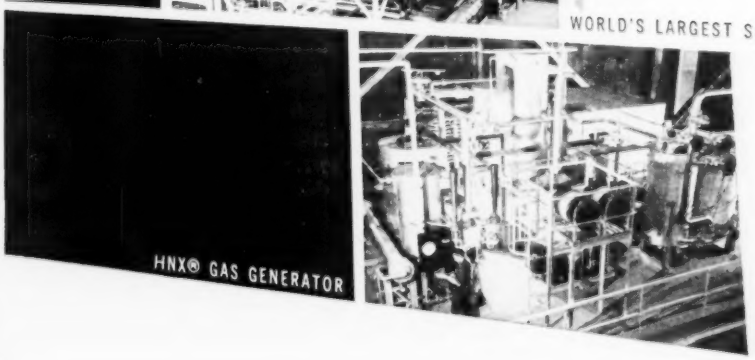


CARBOTTOM COVER FURNACE

ONE-WAY FIRED SOAKING PITS



WORLD'S LARGEST SLAB HEATER



HNX® GAS GENERATOR

You put a solid foundation under your profits whenever you specify Surface equipment. Whatever type it may be, you know it is supported by many interlocked blocks of know-how in heating and handling steel.

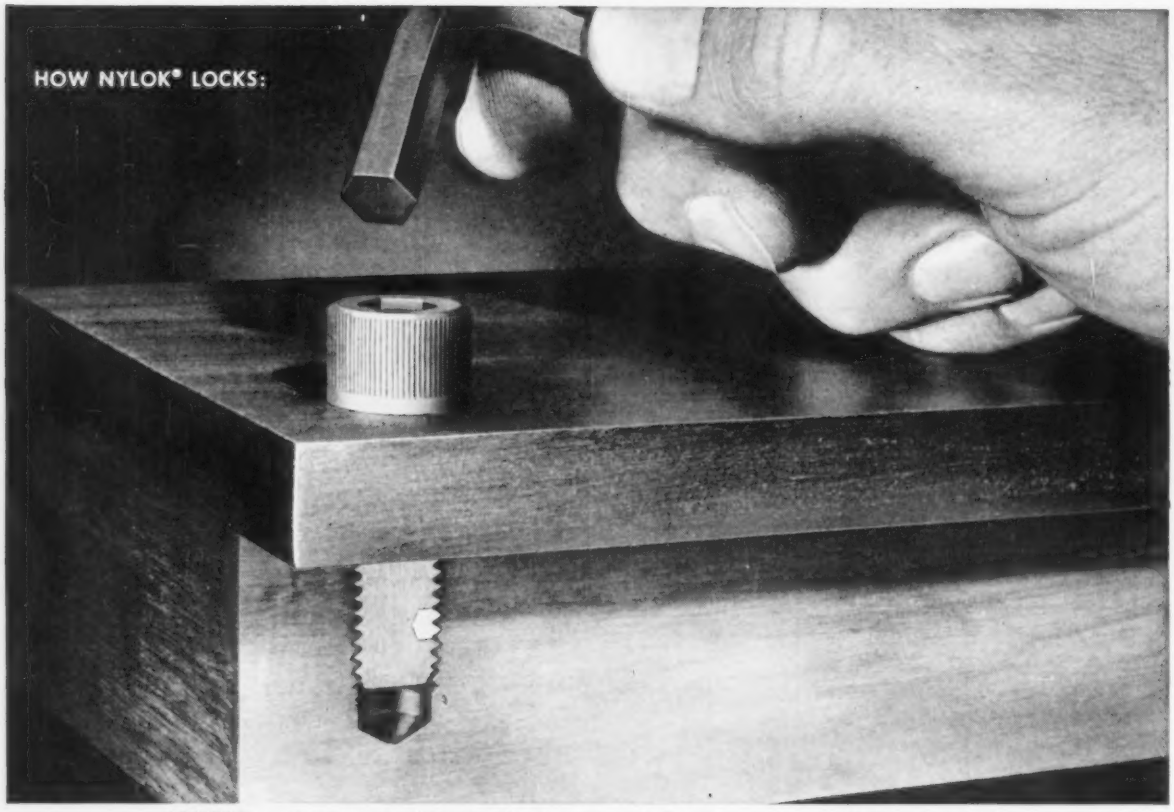
The technical skills which Surface has developed in building soaking pits will benefit the man who buys Surface annealing covers. In the same way, Surface concepts of slab heating contribute to high-speed stress relieving . . . carbon restoration to strip annealing . . . controlled atmospheres to wire patenting.

Because of this broad and deep foundation of experience, Surface can improve any single process in the context of a complete sequence of operations. This is to the customer's profit, as many companies will confirm.

Surface Combustion Corporation, 2402 Dorr St., Toledo 1, Ohio. In Canada: Surface Industrial Furnaces, Ltd., Toronto, Ontario.

Surface®

wherever heat is used in industry



LOCKED! The tough, resilient nylon pellet keys itself into the mating threads. It forces threads together, and locks the screw securely.

NEW—a complete line of self-locking UNBRAKO socket screw products that won't work loose

They simplify design and save production time

UNBRAKO socket screws are now available embodying the Nylok self-locking principle. Nylok provides a truly practical new solution to the problem of making screws self-locking.

You save production time when you build products with self-locking UNBRAKOS. And you get greater simplicity in design with less bulk and weight. The number of parts you must assemble to achieve full locking action is reduced to the absolute minimum. Lockwashers under screw heads are no longer necessary. Costly wiring of cross drilled heads is eliminated. So are cotter pins and complex multiple set screw installations.

Self-Locking UNBRAKOS are completely reusable. They have uniform locking and installation torques—with no galling or seizing on mating threads. They successfully withstand temperatures from —70° to 250°F. And, on properly seated screws, the pellet acts as a liquid seal.

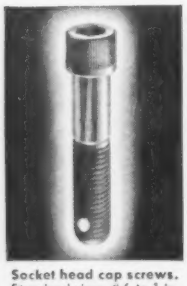
Self-locking UNBRAKO socket screws come in a complete range of standard sizes and materials. See your authorized industrial distributor. Technical data and specifications are detailed in Bulletin 2193. Write us for your copy today. Unbrako Socket Screw Division, STANDARD PRESSED STEEL CO., Jenkintown 17, Pa.

We also manufacture precision titanium fasteners. Write for free booklet.

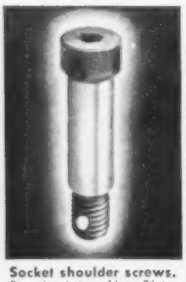
UNBRAKO SOCKET SCREW DIVISION **STANDARD PRESSED STEEL CO.**

SPS

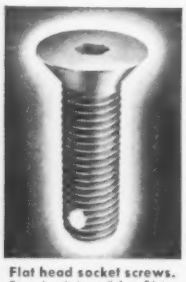
JENKINTOWN PENNSYLVANIA



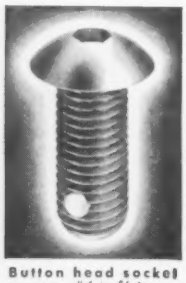
Socket head cap screws. Standard sizes #6 to 1 in.



Socket shoulder screws. Standard sizes ¼ to ¾ in.



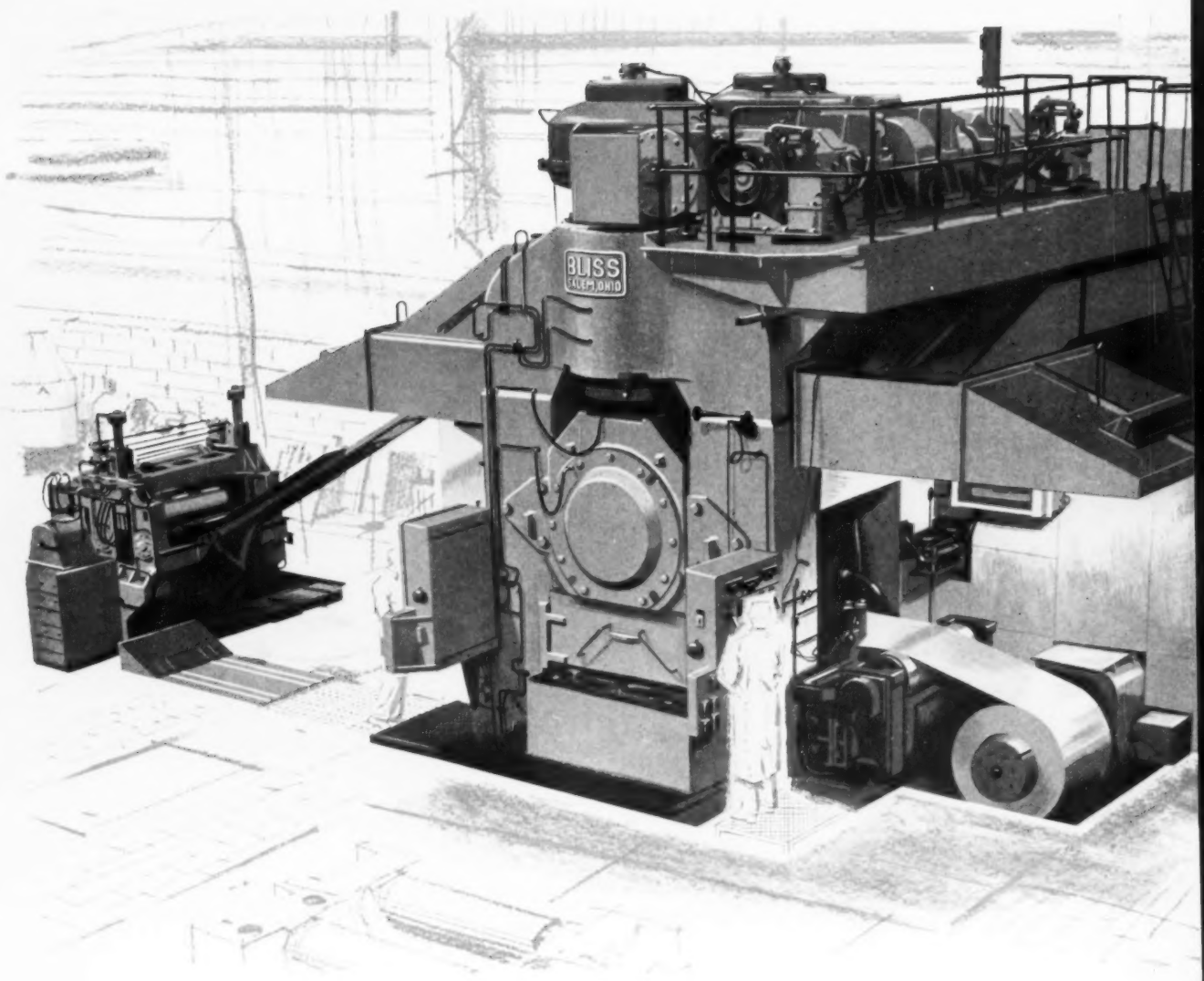
Flat head socket screws. Standard sizes #6 to ¾ in.



Button head socket screws. #6 to ⅝ in.

Socket pressure plugs. Standard sizes ⅛ to 1¼ in.

Socket set screws. All standard point types. #6 to 1 in.



Belgian plant comes back to Bliss for another mill

The Phenix Works, Societe Anonyme, of Flemalle-Haute, Belgium, has just installed its second Bliss mill, a big four-high reversing type that will greatly increase the plant's output of cold rolled sheet products.

The mill has 16" and 53" by 48" rolls, a maximum speed of 2000 feet per minute and coil handling equipment for 30,000-pound, 64"-O.D. coils. It is being used to roll both sheet products and tinplate.

Phenix Works put in its first Bliss mill seven years ago. The second installation is the logical outcome of the company's experience with Bliss equipment and engineering... additional evidence that "The Free World rolls on Bliss mills."

Yours for the asking...

For more information on typical Bliss rolling mill installations, write us today for a free copy of our 60-page Rolling Mill Brochure, Catalog 40-A.

BLISS
SINCE 1857

100 years of making metal work for mankind

E. W. BLISS COMPANY, Rolling Mill Division, Salem, Ohio

Subsidiary: The Matteson Equipment Company, Inc., Poland, Ohio

J-57 compressor rotor, operating at several hundred degrees F., uses discs, blades and other parts of MST 6Al-4V titanium alloy.

MORE THRUST PER POUND

Teamwork of specialists applies titanium alloy to improve mightiest U.S. jet engines

The bold use of new materials is one of the reasons for the preeminence of Pratt & Whitney Aircraft's J-57, and newer J-75 jet engines.

The MST 6Al-4V titanium alloy, which Mallory-Sharon helped develop and introduced commercially, is used in quantities of hundreds of pounds to increase the thrust-per-pound ratio of these engines. This alloy meets the rugged conditions of stress and temperature in engine use.

Mallory-Sharon, one of the first materials producers for this engine, supplies the MST 6Al-4V alloy to various specialists for fabrication . . . Ladish Co. and Wyman-Gordon Co. for spacer and disc forgings . . . Thompson Products, Inc., Eaton Manufacturing Co., Steel Improvement & Forge Co. for blades and other parts . . . which are all furnished to Pratt & Whitney Aircraft.

Let Mallory-Sharon, technical leader in titanium, help *you* apply this new metal. It has the strength and lightness needed in engines and aircraft, the superior corrosion resistance demanded for chemical processing equipment. Write for information.

MALLORY Ti SHARON

MALLORY-SHARON TITANIUM CORPORATION · NILES, OHIO

Producers of titanium and titanium alloy sheet, strip, plate, rod, bar, billets

You buy near-perfection when you specify this Jessop steel

If you visit the Jessop Specialties Division, you'll be immediately impressed with the clean, quiet lab-like atmosphere, the intensity of effort and care that personifies true craftsmanship. For here Jessop processes fine *Truform* oil or *Windsor* air hardening tool steel into one of its top products . . . precision ground flat stock used for the production of highly accurate dies, gages, cutters, machine parts, straight edges or the like. This Jessop product comes as close to perfection as the steelmaker's art logically allows. Each piece, of any size, is highly-finished, dead flat and square, and guaranteed to have a thickness tolerance of plus or minus .001 and a width tolerance of plus .005, minus .000. An inspector double checks the analysis with a delicate Magnetic Analysis Production Comparator and a Profilometer is used for inspection of the finish. After all tests are passed, the stock is carefully wrapped for shipment to Jessop customers all over the world. If you have any application for this type of product, it will pay you to send in an inquiry. Jessop's pride of accomplishment will make it a better buy for you.

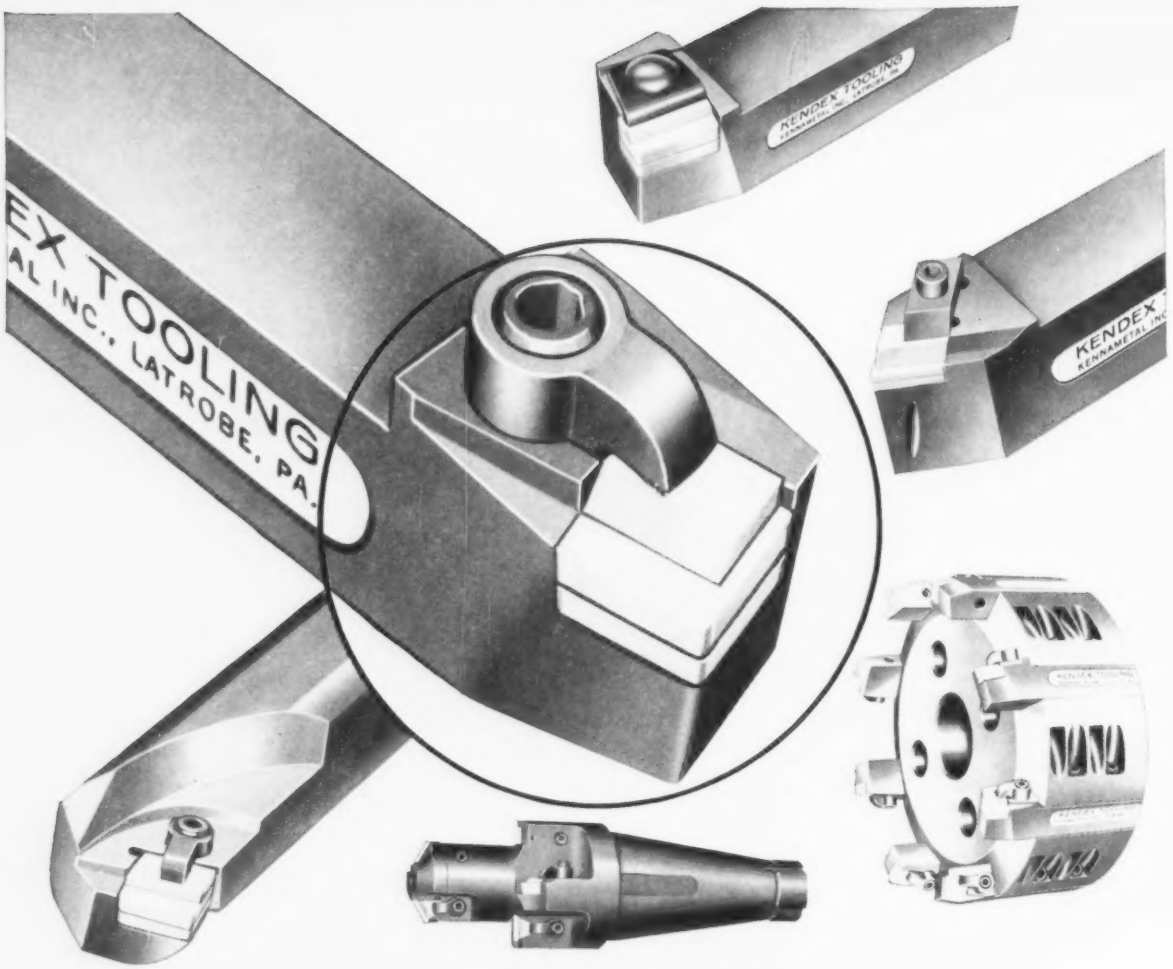
JESSOP

STEEL COMPANY • WASHINGTON, PA.

OFFICES IN PRINCIPAL CITIES

Jessop Steel of Canada Limited, Wallaceburg, Toronto

Jessop Steel International Corp., Chrysler Building, New York, New York



40 STYLES—OVER 200 TOOLS—

MAKE KENDEX* TOOLING ADAPTABLE

for virtually every machining job

The production-boosting, cost-cutting, job-simplifying advantages offered by the Kendex throw-away, turn-over insert principle can be adapted to practically any machining job.

Over 40 styles and over 200 Kendex tools let you make savings in boring; profiling; chamfering; odd job, step and face milling . . . on older machines as well as on the newer automatic cycling types.

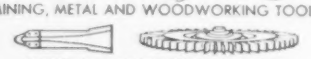
Kendex tools permit quick changing of inserts without resetting the tool, eliminate costly insert and chip-breaker grinding, give better chip control, permit use of harder grades like Kennametal K7H along with many other grades in inserts of various sizes and shapes to give best results on any specific job. Many of the tool styles offer a choice of positive or negative rake which accommodate either regular or precision ground inserts. Kendex offers the most advanced and complete line of metalworking tools available today.

The pictures above merely suggest the many tools in which the Kendex principle is available. Your Kennametal Tool Engineer will help you apply Kendex tools to your operations. He works exclusively with Kennametal tooling . . . applying and servicing it . . . working with production men in mapping the best solutions to tough machining problems. Give him a call or write KENNAMETAL INC., Latrobe, Pennsylvania.

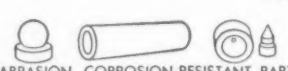
*Trademark

C-3068

MINING, METAL AND WOODWORKING TOOLS


WEAR AND HEAT-RESISTANT PARTS

INDUSTRY AND
KENNAMETAL
...Partners in Progress


ABRASION, CORROSION-RESISTANT PARTS

PERCUSSION AND IMPACT PARTS

For the tough Cold Heading jobs...

KEYSTONE XL WIRE STUDY

Accurate Threaded Fasteners, Inc. looks to KEYSTONE XL WIRE

Unusual and difficult jobs are a challenge to the cold heading division of Accurate Threaded Fasteners, Inc., Chicago, Ill. With their combination of know-how, ingenuity, good machines and Keystone "XL" Wire, they can tackle just about any type of job that comes along—from long production runs to short runs of specials. Shown here are a few examples of their work—in each case the flowability of Keystone "XL" Heading Wire made the job better, faster and cheaper.

And so, another modern wire user learns to depend on Keystone Wire for its exceptional internal and external soundness, accurate size and uniformity of composition and coating.

The list of satisfied customers using Keystone "XL" Wire for both the out-of-the-ordinary jobs, as well as production jobs, keeps growing every day. *Your* name should be included in this list—perhaps for both your cold headed fasteners and parts of your finished products as well.

Check with your Keystone representative for complete details. Our staff of metallurgists and our broad facilities are at your command.

Keystone Steel & Wire Company, Peoria 7, Illinois

KEYSTONE
WIRE FOR INDUSTRY

This fastener was cold headed in an open die. Note that the threads are rolled on, with maximum diameter equal to the rest of the stock. Keystone "XL" flowability was the secret.

This special socket for a spotlight swivel would have involved excessive machining and much material waste. It was cold headed involving a severe upset of 5.5 diameters, and an exceptionally thin-sectioned head. The secret was Keystone "XL" flowability.

This set screw was formed with a blunt point in the double stroke header without machining. The secret was Keystone "XL" Heading Wire flowability.

Keystone Steel & Wire Company
Peoria 7, Illinois

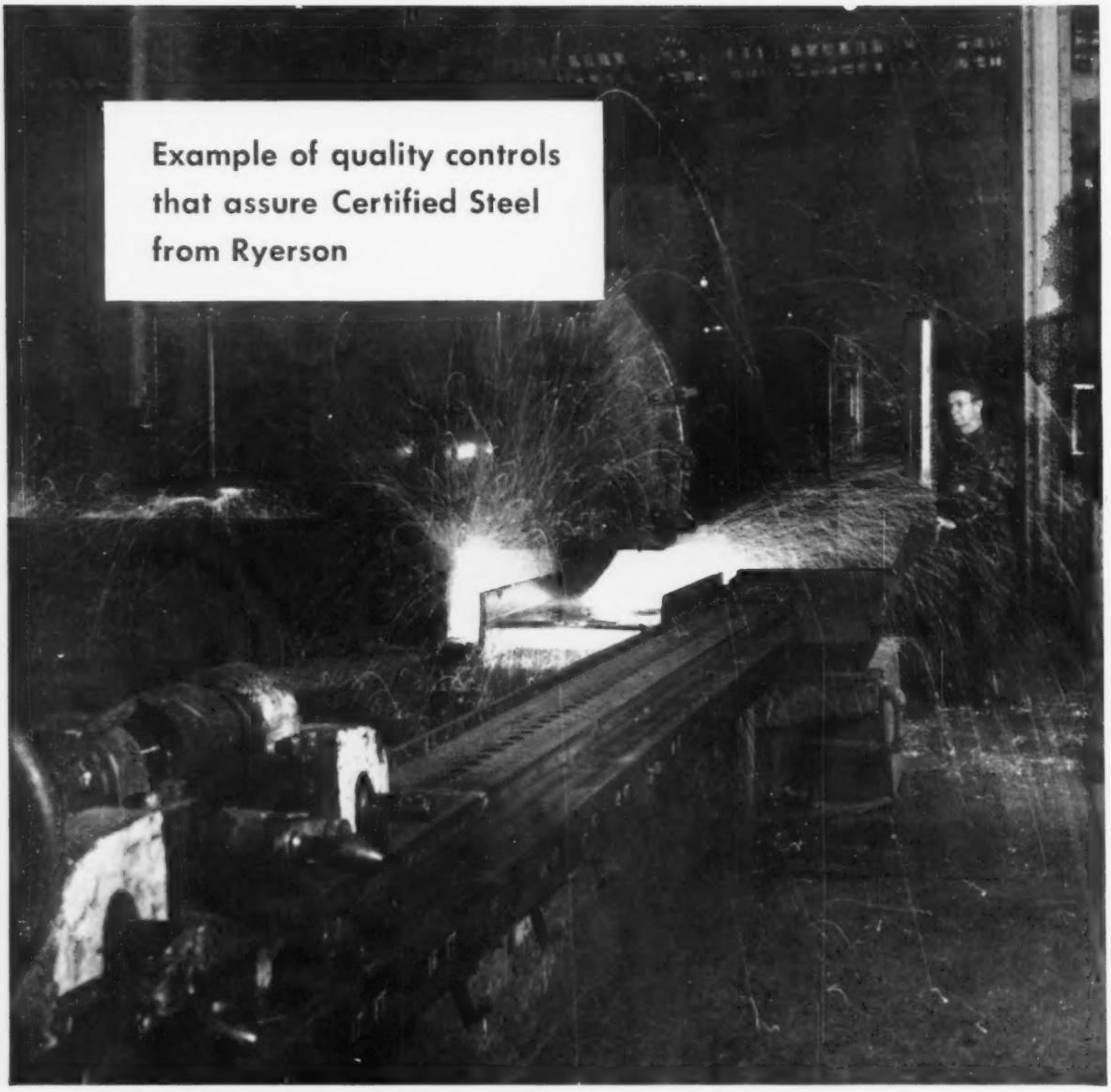
COLD HEADING FACTS FOLDER . . . send coupon today! New folder discusses uses, applications, methods, technical facts, wire requirements.

Name_____ Title_____

Company_____

Street_____

City_____ State_____



Cuts 24" beams in 12 seconds!

When this big friction saw cuts cold steel like hot butter it also completes one more step in the quality control of Ryerson steel.

A new method of blade alignment and an automatic gauge of our own design assure a remarkably straight, true cut—and frequent blade changes result in minimum burr!

This kind of control is typical of the exacting attention we give to every operation. As a result, we achieve far greater accuracy than called for in standard tolerance tables—almost without exception.

Certified cutting of Ryerson steel and the over-all control of Ryerson steel quality are important points to remember when you're specifying or buying steel from stock.

RYERSON STEEL

In stock: Carbon, alloy & stainless steel—bars, structurals, plates, sheets, tubing, industrial plastics, machinery, etc.

JOSEPH T. RYERSON & SON, INC. PLANTS AT: NEW YORK • BOSTON • WALLINGFORD, CONN. • PHILADELPHIA • CHARLOTTE • CINCINNATI CLEVELAND • DETROIT • PITTSBURGH • BUFFALO • CHICAGO • MILWAUKEE • ST. LOUIS • LOS ANGELES • SAN FRANCISCO • SPOKANE • SEATTLE

Carton Absorbs Shocks

For shippers of fragile parts, there's a new type of corrugated shipping carton. A "bridge" of polyethylene film, sealed at intervals to form individual little compartments, is suspended between two ends of the carton. Fragile parts, packed into these plastic compartments, literally swing in space while en route to their destination.

New Plastic-Metal Bond

Most plastic-to-metal bonding is done with adhesives of the epoxy or phenol-formaldehyde types. A new technique does the bonding strictly by mechanical means. It involves perforating the metal sheet with small, closely-spaced holes. When the plastic film is spread over this surface, application of heat and pressure forces some of the plastic through the holes. When the job is done properly, the metal and plastic are virtually inseparable.

Low-Alloy Stainless

A new series of low-alloy steels claim about the same oxidation resistance as 18-8 stainless grades. Developed by British research, the new materials use only silicon and aluminum as prime alloying elements. Designed to operate in the 1100-1750°F range, the new steels are expected to prove ideal for heat exchangers and electric furnaces.

Freight Cars Still Short

Unless the replacement rate is stepped up, the freight car shortage will continue another four years. Deliveries for the full years 1956 and 1957 will total about 150,000 units, but scrappage and other factors will drag the net gain down to about 50,000 cars. Railroaders believe this net must be boosted by another 100,000 to give the lines all the cars they need.

Imports Hurt Brass Mills

U. S. brass mills face a serious problem from a growing list of import items. And the list is being extended from basic brass mill products to include many articles in which such products are used. Low wage rates abroad make it possible to sell these goods at prices American mills and manufacturers can't possibly meet. To increase mill owner's woes, the markets most affected are those that cost them the most to develop and maintain.

Troubles With Titanium

Aircraft manufacturers were asked to name the chief difficulties encountered with the titanium they bought last year. Big one of three years ago—nonuniformity of mechanical properties—is now well down the list. Top trouble now is thickness variation, which will get more irksome as stronger alloys are developed. Other frequently mentioned problems: hydrogen contamination and poor surface finish.

Prestressing Cuts Fatigue

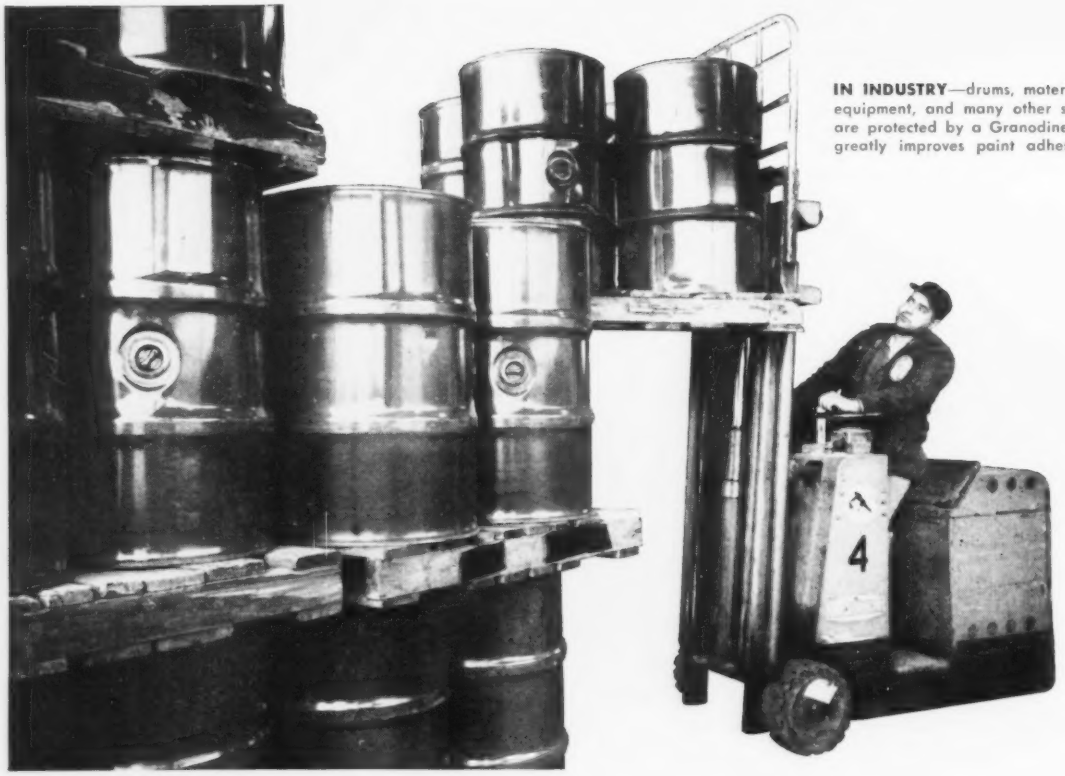
Prestressing formed steel hydraulic tubing boosts fatigue life and also saves weight, according to a research report. The technique consists of applying a high hydrostatic pressure inside the tubing after it is formed. Weight savings range from 12 to 35 pct in formed tubes designed for a given power transmission.

Warehouse Sales Up

Steel warehouse sales are already on the upswing, tipping off expectations of a strong fall season. Forecasters are willing to bet on an increase of over 15 pct in general business levels before November. Thus far, the prediction hasn't been borne out by any notable increase in warehouse purchases from their mill sources.

Cold-Work Method To Grow

Already acclaimed in the munitions field, the hot-cup, cold-draw metalworking technique seems feasible for many civilian products. It could be used to make track-shoe parts for tractors; components for auto suspension units. On artillery shells up to 8-in. diam., the process saves metal and manhours, also boosts dimensional accuracy.



IN INDUSTRY—drums, materials handling equipment, and many other steel products are protected by a Granodine base, which greatly improves paint adhesion.

ACP *Granodine*® —BASE FOR DURABLE PAINT FINISHES ON DRUMS, MATERIALS HANDLING EQUIPMENT, AND OTHER STEEL PRODUCTS USED IN INDUSTRIAL PLANTS

Granodine Process	Type of Coating	Method of Application	Government Specifications
Granodine 20	Zinc phosphate (microcrystalline)	Dip	Jan-C-490, Grade 1 MIL-C-490A, Grade 1 MIL-S-5002 U. S. A. 57-0-2, Type II, Class C
Granodine 33	Zinc phosphate	Spray	Jan-C-490, Grade 1 MIL-C-490A, Grade 1 MIL-S-5002 U. S. A. 57-0-2, Type II, Class C
Granodine 45	Zinc phosphate	Dip	Jan-C-490, Grade 1 MIL-C-490A, Grade 1 MIL-S-5002 U. S. A. 57-0-2, Type II, Class C
Granodine 65	Zinc phosphate	Spray	Jan-C-490, Grade 1 MIL-C-490A, Grade 1 MIL-S-5002 U. S. A. 57-0-2, Type II, Class C
Granodine 80	Zinc Phosphate	Spray / Dip	Jan-C-490, Grade 1 MIL-C-490A, Grade 1 MIL-S-5002 U. S. A. 57-0-2, Type II, Class C
Granodine 500	Iron phosphate	Spray	
Granodine 50	Zinc phosphate	Brush	Under certain conditions, this process will meet one or more of the above specifications

ACP Granodine firmly bonds the paint finish on many steel products used in industrial plants, giving them lasting protection by converting the surface to a nonmetallic phosphate coating. This chemically deposited film greatly increases the adhesion of the finish and also provides high corrosion resistance — even when used in conjunction with a relatively thin and flexible paint film.

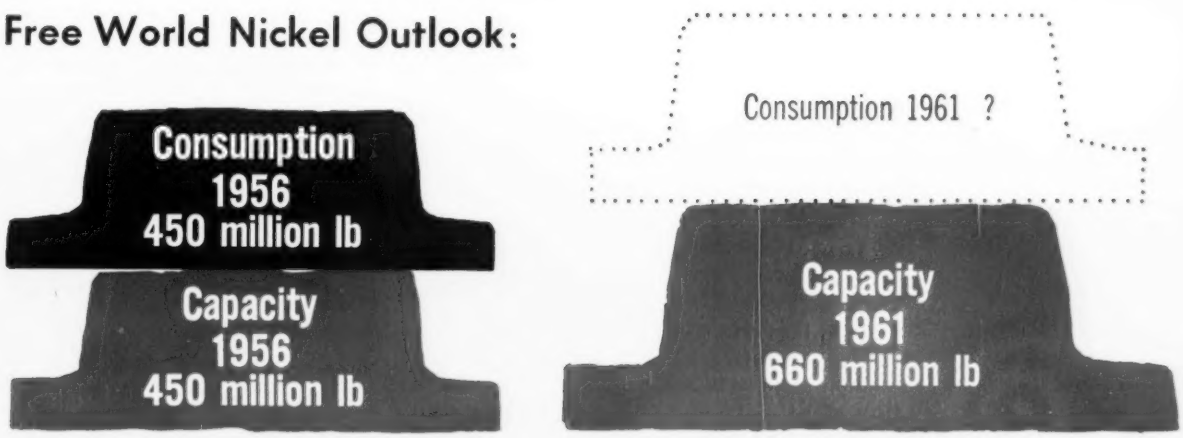
LEARN MORE ABOUT ACP GRANODINE Bulletin 1380 describes the various types and gives information which will help you select the proper one for your particular application. Write for your copy today.

AMERICAN CHEMICAL PAINT COMPANY, Ambler 20, Pa.

DETROIT, MICH. • ST. JOSEPH, MO. • NILES, CALIF. • WINDSOR, ONT.

CHEMICALS ACP PROCESSES

New Chemical Horizons for Industry and Agriculture



Nickel Outlook Good; Signs Point to End of Famine

Supply picture is the brightest it's been for years, as Inco president says a surplus of nickel by 1961 is "a real possibility."

Signs are in the air already, as consumers' stocks hit new high.

Major expansions will put about 150 million more lb of nickel on the market.—By F. J. Starin.

■ Nickel companies may be doing a sales about-face. Instead of briefly handing out your allotment, they will sell you on designing more nickel into your product in the future.

Henry S. Wingate, president, International Nickel Co., which accounts for about 60 pct of the free world supply, says, "There is now a real possibility that capacity will outrun demand for nickel by about 1961."

Woo Them Back — And Mr. Wingate isn't just talking. Inco is gearing its sales and research staffs to prevent too much of a surplus. The goal: to knock on doors of operations that have been designing away from nickel because of its scarcity.

There are real reasons to believe a surplus may be ahead: (1) Tremendous increase in capacity from Inco's Manitoba and Sudbury projects (100 million lb.) Freeport Sulphur Co.'s new operation at Moa Bay, Cuba (50 million lb), and further increases by other producers; (2) Likelihood that the U.S. won't slice off much, if any, of the total for the stockpile; (3) Hope that defense demand for nickel won't increase.

Less Stockpile Pressure — By 1961 Inco will bring in over 100 million lb of additional capacity. Inco president Wingate reports the company had hoped the U.S. government would give the company an option of "putting" some of this in the stockpile. They asked for coverage of the first 150 million lb of production at 74¢ per lb or lower should the market drop, and offered a "call" of 30 pct of this.

The government turned thumbs down on the proposal. This doesn't change the company's plans, says Mr. Wingate. The move has been taken as the most current indication the government doesn't feel there is any necessity to add to the nickel stockpile. The door is still

INCO'S WINGATE: ". . . A real possibility that supply will outrun demand for nickel by 1961."

IN CANADA: When workmen get finished carving mines, building plants and roads, and laying rails in the wilds of Manitoba, International Nickel Co. will be able to put 100 million more lb of nickel on the market.

DRILLING: Samples taken from this shaft will tell Inco technicians grade of ore they'll work with.

open, most observers say, because the stockpile is nowhere near full.

Defense a Question Mark—Defense demand for nickel is probably the second biggest factor after the expansion plans, and is the most unpredictable. A Freeport spokesman says his company anticipates a growth in defense demand. Inco president Wingate says no one can know the answer, but on balance expects defense demands to remain about as at present.

Considering the situation as a whole, Mr. Wingate points out that a big chunk of the 450 million lb of nickel produced in the free world in 1956 went to the stockpile and to defense rated orders. A considerably smaller piece of the 650-675 million lb that will be produced in 1961 will be earmarked for these markets, he continues.

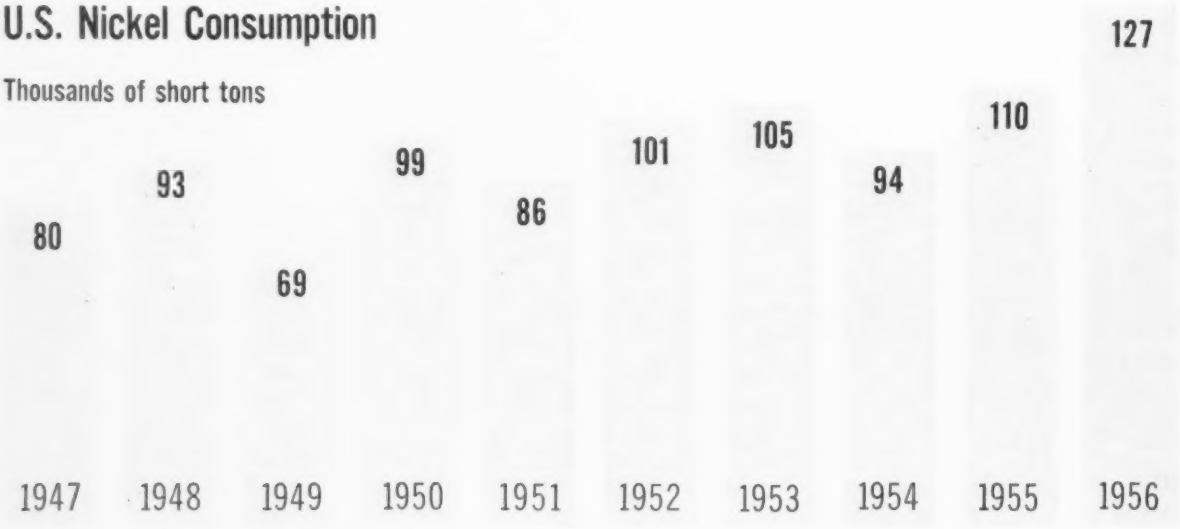
Less Premium Priced — Some premium priced nickel may fall by the wayside in case of a nickel surplus, but not much. Government contracts under which Inco is mining low grade ore will run out in 1958. And in most other cases the premium was agreed on because of the expense of a new plant rather than because the ore is uneconomical. Of course Japanese and French nickel, for which the price has been as high as $2.50 to $3.50 per lb, will no longer be imported, but this is a very minor tonnage.

Signs of impending surplus are in the air already. Mr. Wingate reports many of Inco's customers have turned down part of their allotments of premium priced nickel.

Inventories Grow—The Interior Dept. reports stocks of nickel in the hands of consumers are now something in excess of 31 million lb. This is more than double what consumers held at the end of 1955, and 50 pct greater than at the beginning of this year. An experienced market observer says that as

U.S. Nickel Consumption

Thousands of short tons



SUPPLIES: Helicopters have proved to be the most practical means of moving in supplies.

far as he can remember current stocks in plants are the largest that consumers have ever accumulated.

One of the top men in National Lead Co.'s team operating the Nicaro smelter for the government reports he recently took a trip to the plant in order to improve specifications. Since the Nicaro plant is government-owned, output has been geared to stockpile specifications. These are somewhat different than what is ideal for some applications, such as electroplating. For the first time some customers are beginning to object.

A "Good Thing"—International Nickel, the company most likely to be affected by any change in market conditions, is not worried about a surplus as long as it isn't too large. Mr. Wingate calls it a "good thing", says, "I don't know of a better way to get customers to use more nickel than to give them assurance they will be able to get what they need."

Price Stable—The price structure of nickel is not likely to change with an altered market situation. The Inco president assures consumers that there will be no change in Inco's policy of selling its nickel at a stable price which will promote development of markets. There appears to be no prospect of an early change in the price of nickel.

On the long haul, it would seem there is little chance for any drop in price, despite any surplus. Freeport Sulphur Co., which will begin production in Cuba in 1959, has a "put" contract with the government at 74¢ per lb. If the market should weaken too much, Freeport could take enough metal out of circulation to firm the price.

Freeport's Plans — Freeport's contract permits it to put almost its entire production from 1959 to 1965 with the government. If Freeport were to take full advantage of this it would eliminate any possible surplus. But this looks highly unlikely right now. Freeport is more interested in developing markets than in balancing output-sales books. The company already is looking actively for new business. If production surpluses aren't too great the company will likely stock the metal itself, to assure customers of a firm future supply.

The date on which operations are scheduled to start at Freeport's new nickel plant is no accident. The company states it aims to get into production well before the output from Inco's Manitoba project hits the market to give it the edge in landing any substantial new business around.

Inco to Shareholders—In a recent letter to stockholders, International Nickel's chairman of the board, John F. Thompson, reports, "There are at present unmistakeable signs that the supply and demand position for nickel is tending to equilibrium more rapidly than had been anticipated."

The Inco chairman says 75 pct more nickel will be available for civilian use in 1961 than in 1956 provided: (1) Defense spending stays about the same; (2) no nickel is taken into the stockpile.

Reprints of this article are available as long as the supply lasts. You may obtain a copy from Reader Service Dept., THE IRON AGE, Chestnut & 56th Sts., Philadelphia 39, Pa.

IN CUBA: Building the 50 million lb Freeport plant in Cuba started from scratch. Gravel is for roads.

WATER TOWER: Work is proceeding on schedule and Freeport hopes to start producing by 1959.

MOA BAY, CUBA: Most of the male residents of this sleepy town will probably work for Freeport.

THE TEAM: Roger M. Blough, chairman of U. S. Steel Corp. (center), and top officials at steel price hearing.

Steel Industry Wins First Round

If Sen. Kefauver expected the steel industry to go on the defensive, he was mistaken.

U. S. Steel's Roger Blough states his company's case before Senate subcommittee. Others may follow.—By J. B. Delaney.

▪ The steel industry has its back up. Sen. Estes Kefauver's subcommittee on antitrust and monopoly is having a rough time labeling steel pricing policies as one of the prime causes of inflation.

The committee ostensibly is investigating so-called "administered" prices in steel and other major industries. But it became clear at the outset that Sen. Kefauver questioned the propriety of last July's $6 per ton steel price boost to compensate for rising wage and material costs.

Takes the Offensive—The committee last week called U. S. Steel Corp. as Exhibit A. But the Corporation refused to follow the script. Instead, Roger M. Blough, U. S. Steel chairman, came out fighting.

With a supporting team of top Corporation officials behind him, Mr. Blough took the offensive from the start. He insisted on presenting U. S. Steel's position in what he called "an orderly manner." He refused to be boxed in by leading questions tossed at him by Sen. Kefauver. He questioned figures used by the committee chairman as to the effect of the steel price boost on the costs of consuming industries.

An Even Match—Some of the verbal fencing between Sen. Kefauver and Mr. Blough were classic examples of the knowledgeable witness parrying the skilled questioner.

Indications are that if and when other steel companies are asked to testify, they will follow the same pattern set by U. S. Steel. U. S. Steel Corp. was expected to wind up its presentation this week. The United Steel Workers, which has said the steel price boost was not necessary, will be called immediately following U. S. Steel. Other steel firms will be summoned in the indefinite future, if at all.

Give and Take—At one point, Sen. Kefauver asked Mr. Blough whether he had talked with other steel companies before deciding on the amount of the price boost.

"Senator, I believe you know as well as I do that is illegal," countered Mr. Blough.

On the matter of rising costs apart from steel wage increases, Mr. Blough estimated that last week's 7 pct freight rate increase will cost U. S. Steel in the neighborhood of 65 to 70 cents per ton of steel shipped.

Difference of Opinion — In his opening statement, Sen. Kefauver quoted estimates that the steel price increase will cost the petroleum industry $40 million a year, the auto industry $130 to $140 million a year, appliance makers $215 million.

Mr. Blough said he questioned these figures. Then he went on to

BEFORE THE BATTLE: Sen. Kefauver and Roger Blough compare notes.

say that carefully-prepared estimates indicated that the price boost added only $5.20 to the cost of a $2700 farm tractor, 2 cents to the cost of a $20 automatic toaster, 35 cents to the cost of a $140 electric washer, $11.58 to the cost of a $2630 four-door sedan.

As part of his prepared testimony, Mr. Blough said: ". . . Rising prices do not cause inflation; they are the result of inflation. As a knowing friend of mine put it: Price increases cause inflation like wet streets cause rain."

Just the Facts—At the outset, Mr. Blough said he wanted to dispel what he called "economic superstition" concerning the effect of steel price rises on the nation's economy.

". . . The belief still seems to persist," he said, "that there is something special and different about steel—that a rise in the price of steel can somehow touch off a new round of inflation; and that it will quickly affect the sensitive pocketbook-nerve of every man, woman and child in America."

"Mr. Chairman, that is sheer economic superstition; and it behooves us, I think, to expose it as such, for if this committee is to contribute—as I hope it will—to a broader public understanding of the real causes of inflation, it must deal in facts, and not in unsupported assumptions, however long those assumptions may have been an established part of our national folklore."

Small Increase — Mr. Blough went on to say that the recent steel price increase will affect the average family's budget by about .04 pct. "That," he said, "is considerably less than one cent a day for a $5000 a year budget—or not even enough to buy one cigarette."

The U. S. Steel chairman said the average price charged by his company for carbon and alloy steel is about 7¾ cents per pound.

"It seems to me," he added, "that in comparison with almost everything else we buy, 7¾-cent steel must be regarded as something of a modern industrial miracle."

The so-called "high price of steel," Mr. Blough said, "is, in my opinion, another myth, pure and simple. Conceivably this myth has been born of a natural desire to find some convenient scapegoat upon which to blame our inflationary troubles. If so, however, it is my purpose to see that United States Steel does not become that scapegoat."

Remember '48—On the question of whether U. S. Steel could have held the price line despite the estimated employment cost increase of 21 cents an hour last July 1, Mr. Blough recalled his company's "noble experiment" in 1948 when it cut its prices after rejecting a union demand for wage increases.

"I'm sure you all know what

TOP COVERAGE: Press and television gave on-the-spot coverage to Senate committee's probe into steel's pricing policies.

happened. Other unions demanded another big round of wage increases —and got them. Other companies had to raise prices to pay for them. Our costs kept soaring skyward.

"We might as well have tried to stop an express train with a pea-shooter. So, three months later, we had to rescind our price action, increase the pay of our workers, and try to catch up with the parade that we had fallen so far behind."

Lessons Learned — He said the "noble experiment" was not a total loss, because it taught the Corporation three important lessons:

"First, that no one company, no one industry, and no one union can alone stop the march of inflation.

"Second, that neither the steel industry nor any other industry ever sets the wage pattern in America; for the postwar wage pattern has been a never-ending spiral in which each industry, in its turn, is called on to pay a little more than the preceding industry did, and the next industry must then pay a little more than that.

"Third, we learned from the stark statistical evidence, that a cut in steel prices produces no discernible or identifiable effect upon the cost of living."

Defends Status—The U. S. Steel chairman also set out to clear up what he called "free-wheeling assumptions." One of these assumptions, he said, is that big companies have no real competition; that they enjoy a "monopoly power" or "concentration of power" which enable them to boost prices and reap "fabulous profits."

He then recalled that when U. S. Steel was organized 56 years ago, it produced twice as much steel as all its competitors combined. Under these conditions, he said, the Corporation could have expanded its production at the expense of its competitors, or "at the very least it would have held its own ground against them." If that were the case, he said, U. S. Steel today would be producing something like 66 pct of total domestic output, as it did in 1902.

"The fact is, however, it does not. Today it produces less than 30 pct of the steel that is made in America; and where once it turned out twice as much as all of its competitors put together, its competitors now turn out more than twice as much as it does.

Share Declines—"It is true that U. S. Steel has grown during this period and that last year it produced about three times as much steel as it did in 1902; but its competitors have grown far more lustily. They produced 15 times as much steel as they did in 1902."

U. S. Steel's present share of total industry capacity dropped this year to 29.7 pct, Mr. Blough said.

Fought Inflation — "To enforce what we regard as inflationary wage demands," Mr. Blough said, "the union has struck our plants five times in the past 11 years; and we have taken these costly strikes in an effort to hold the line against inflation.

"But hardly has one of these strikes begun before there is a nationwide demand that we settle it. Our customers must have steel or close their plants. Their employees face layoffs and loss of pay. The government, too, must have steel; and daily the pressures upon us keep building up. And ultimately —if we do not settle—we may face the threat of government intervention, as happened five years ago when the then President of the United States seized our plants illegally and sought to grant the union demands in full."

New Reactive Plant

Reactive Metals Inc., subsidiary of Mallory-Sharon Titanium Corp., and U. S. Industrial Chemicals Co., is set to begin production in its new plant in Ashtabula, O., in September.

The company, currently using Mallory-Sharon and other facilities, hopes to make the new plant the country's largest facility for melting of zirconium.

MACHINING: Learner's course should stress modern methods.

Critics Rip

Vocational teachers get earful on what's wrong from industry, labor and government.

Advice: Modernize, visit field often, teach students more than just a trade.—By P. J. Cathey.

▪ Metal trades training teachers have received an earful of what's wrong with their methods from industrial, union and governmental critics.

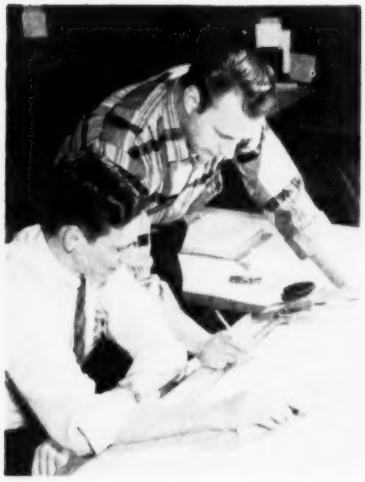
The brickbats, together with a few bouquets, were tossed at the teachers during the recent annual convention of the American Vocational Association at Philadelphia.

There public school vocational instructors heard a group of panelists make the following indictments of today's metals training courses.

Teachers don't emphasize the fundamentals students will need in industry.

Specialized training, in many cases, is overstressed. One speaker scorned the philosophy of "nuclear reactors are the coming thing, let's teach everyone to build them."

Instructors don't keep pace with fast-changing technology, new production ideas, and new tools.



DRAFTING: Good training leaves student with problem-solving skill.

COMPANY TRAINING: Spread of company and trade union schools, critics say, reflects lack of confidence in vocational school instructions.

Metal Trade School Methods

Schools put too much stress on teaching the trade, not enough on teaching the man. Industry wants well-rounded graduates, able to think well on their feet and move ahead to more important posts.

Not enough attention is given to getting the right type of trainee in the right course.

Vocational guidance doesn't often get enough consideration.

Instruction isn't developed so a student can relate what he learns in school with what's expected when he goes on the factory payroll.

Textbooks, while often good, are old-fashioned. There's a need for more books teaching short work methods.

Schools in an area dominated by one type of industry may overstress courses in that field, and neglect others more suited to some of the trainees.

Teachers don't have enough field contacts with industry to keep up on new developments.

They don't ask for help as often as they could from industry, from local industrial developers, and from the government.

Critical Areas—The panelists also put their finger on some metalworking fields where the need for industrial trainees is critical. Wanted are apprentice welders, foundrymen, structural iron workers, and sheet metal fabricators.

Welding, claims H. A. Sosnin, of Tube Turns and of the American Welding Society, is the stepchild of metal trades training. He feels it should be taught, not solely as a separate trade, but as an integral part of other metals training courses.

Welder training has lagged behind the industry's growth, he adds, and the gap must be closed. "In the next ten years," he predicts, "a man who can't weld won't be able to hold down a job in the metal trades industry."

Word To The Wise—Mr. Sosnin, as well as others, warns the teachers that the growth of trade schools run by industry and labor unions reflects critically on the vacuum left by present-day vocational school training efforts.

A plea that teachers keep in mind the constant impact of technology on the skills industry needs is made by Dewey Barich, Dept. of Educational Affairs, Ford Motor Co. As an example he notes the growing shift in the automotive field from turret lathe operations to press forming with finish grinding.

He also stresses that industry wants well-rounded workmen to which management can look for future shop and office leaders. This same chord was struck by William Clitheroe, International Assn. of Machinists, when he asked that students get a broad education to make them industrially flexible. "Knowing how to communicate with others," Clitheroe says, "is just as important for the machinist as it is for the Madison Ave. advertising man."

Keep abreast of the latest developments, the teachers are urged by Frank Howard, of the Bureau of Vocational Curriculum Development and Industrial Teacher Training, Albany, N. Y. He advises serving on joint industry-labor and community committees, reading industrial trade journals and checking graduates on the job to test the soundness of classroom teaching.

PHOTOS: Brown & Sharpe Mfg. Co. and Beloit Eastern Corp.

Construction Equipment Makers Hope Worst Is Over

There is a lot of gloomy talk about slow sales of heavy construction equipment.

Slack in the federal road building program is one factor behind disappointing sales.

It isn't all bad. Retail sales are beginning to break through inventory glut. — By K. W. Bennett.

▪ "Our construction equipment sales are 20 pct behind a year ago. They'll be just as bad as that at the end of this year."

The speaker is one of the army of former optimists who, five months earlier, forecasted a 15 pct sales gain for construction equipment this year. In 1956, sales of earthmoving equipment soared to a record $863 million in value of manufacturers' shipments.

Crying Wolf?—But the current pessimism is beginning to sound suspiciously like the wild enthusiasm of last January. It is developing a hollow ring. Construction equipment had a bad second quarter, there is no doubt. Many firms were in trouble even during the record output period of the first quarter, 1957.

Oliver Corp., for example, slipped from $10,064,000 to $9,175,000. International Harvester construction equipment output slipped in value from $94,236,000 in early 1956 to $76,534,000 in a similar period this year.

Guessed Wrong—The industry, anticipating strong gains when the building season opened in March, ground out a record first quarter output, worth $228,213,000 compared with output valued at $208,877,000 in the first quarter of record-breaking 1956. Poor sales resulted in overloaded inventories.

But the market is taking hold. Caterpillar, giant of the industry, did a $364,663,632 gross in the first half of 1956. This year in the same period it grossed $372,048,929. The company's dealer sales are reported to have hit record highs in the second quarter, when a good share of the construction equipment industry was shaking off the effects of glutted dealer inventories.

Retail Sales Gain — Another member of growing importance in the field, Clark Equipment Co., is expected to hit a record volume of construction equipment business this year.

Five of eight major firms surveyed report that sales gains at the retail level have already been sufficient to boost factory sales. All others report a pickup in dealer sales.

It hasn't been fun. First quarter overproduction, coupled with carryovers of 1956 equipment at the dealer level, seems to have been the villain. First quarter production hit 10 pct over the year-ago period, and 31 pct over the preceding quarter. A late building season, a drop in housing starts that cut back light equipment demand, and the historic March buying advance failed to materialize.

MOVING UP: Orders for units like this Clark Equipment Co. earth mover are gaining after poor first half.

Word that the 13 year highway program was stretching out 16 years heightened the gloom.

What Happened—Second quarter equipment production dropped with elevator speed. Production cutbacks of 35 pct were common. Labor unions complained that 19,000 men had been laid off.

While considerable blame has been laid at the door of the federal highway program, expected to produce $5.6 billion in total expenditures in 1957, this isn't a prime cause. There is $1,342 million in the fund and only $845 million has been earmarked to states. But even this cutback doesn't account for construction equipment cutbacks in second quarter estimated as deep as 25 pct.

Highway expenditures—even on the $5.6 billion estimate — accounted for only 12 pct of planned new building in the U. S. during 1957, even when it was acknowledged that housing starts would be off sharply. Commercial, industrial, and general government building expenditures have held, and much better than the deep slash in construction equipment production would indicate.

Contractor Trouble—The deeper problem, some equipment manufacturers are beginning to feel, lies with the contractor himself, the ultimate buyer. His position is shaky. Almost 13 pct of U. S. business failures, as early as 1955, were construction firms. Yet the total grew from 1404 in 1955 to 1834 firms in 1956. An industry that received a 5 pct return on its dollar in 1947 received only 1.5 pct in 1956. (THE IRON AGE, Feb. 7, 1957)

Low bids on some state highway projects, early this year, were only 75 pct of the high bids. The profit margin is shrinking. Pinned by short credit and shorter available capital, the contractor can buy equipment only as he absolutely needs it. The result: When the building season came late this year, contractors refused to buy and dealers grew panicky.

A Rising Barometer: Coated Steel

Industry's sole producer of aluminized steel is getting rushed for orders.

It indicates a pickup is on its way for other flat-rolled products.

▪ Aluminum-coated steel — tonnagewise a minor product—last week looked like a good barometer for the flat-rolled business. In the space of a week, the order backlog went out a month. And it's still going.

Reason behind the rash of orders is a counterpart of the hot- and cold-rolled sheet picture. Inventories of aluminized steel at automotive plants, representing 60 pct of the market, have been run into the ground. Automakers decided to build them up for a strong finish on current models. So the orders are pouring into the lone producer, Armco Steel.

Other Markets Hot—Meanwhile other markets such as farm construction, household goods, small and large appliances, heaters, which also use it, are catching fire. The pickup in all these snowballed into a rush of orders and is also leading a general increase in orders for cold-rolled sheet and other flat-rolled products in which Armco is a major factor.

Biggest volume for the aluminized steel is in automotive mufflers and exhaust systems where the corrosion resistance properties cut maintenance. This represents about 60 pct of all tonnage and is growing steadily.

Many Uses—Trucks are a big user since buyers will go for a little higher original outlay to cut early muffler and tailpipe replacements. Automobiles also use aluminized steel in critical parts of the exhaust systems. But builders have so far been reluctant to invest the extra money for completely aluminized exhaust systems which would not rust out. Service life of 100,000 mi. on all-aluminized truck exhausts are common compared to about 37,000 mi. with conventional steel types. Airplane builders are also successfully using aluminized steel in after-burners and other high temperature applications.

The remaining market is about equally divided between housewares such as outdoor barbeques, toasters, etc., and major appliances such as home laundries, dryers, heaters, furnaces and incinerators.

The Types — Two types are turned out. Type 1 and Type 1—Extra Smooth, both of which will resist heat to 1250°. A small amount of silicon is used in the aluminum for heat resistance and gives about 10 times the life of carbon steel in corrosive conditions. The aluminum coating is 0.001 in. per side, about the same as galvanized. Extra Smooth has an extra temper roll.

Type 2 has a double thickness coating of pure aluminum. It is ideal for construction of barns, commercial buildings and other outdoor structures and general architectural use.

A new series of standardized mass-production commercial buildings being sold by Armco is taking increased tonnage.

Process Is Patented—The aluminized sheet is turned out by a patented hot dip process at Armco's Butler, Pa., mill rated about 3500 tons per month. Additional hot dip facilities are available at Middletown, O., and Ashland, Ky.

Zinc Outlook Takes a Good Turn

High Rate of Consumption Continues

Are the moans and groans of some domestic zinc producers really warranted?

This voice from deep in the heart of the industry indicates otherwise.

▪ The year 1957 may yet turn out to be one of the zinc industry's best, the American Zinc Institute predicts. This despite a current unbalance between production and consumption of slab zinc, the drop in zinc prices, and the "wait and see" attitude of zinc purchasers.

Injecting the note of optimism into what seems a sagging market is John L. Kimberley, AZI executive vice president. He estimates that consumption of slab zinc may exceed 900,000 tons this year.

Seasonal Upswing Coming—Backing up his estimate are U. S. Bureau of Mines zinc consumption figures for the first five months of 1957, plus conservative industry estimates for the balance of the year.

The Bureau of Mines preliminary tally through May, 1957 shows consumption of slab zinc at 401,185 tons.

If consumption remains low through August and increases slightly during the last four months of the year, as it has done in the past, the total consumption figure will be in the neighborhood of 950,000 tons, Mr. Kimberley says. Provided this estimate is reached, 1957 will be only slightly below last year's 988,097 tons and the 985,927 tons consumed in 1953. In the industry's record year, 1955, the total was 1,119,812 tons.

Long Term Outlook—Mr. Kimberley sees the long range trend of zinc slab consumption as "well upward." He cites especially the growing demand for zinc to galvanize steel, zinc's rising position in die casting, and its steady use in rolled forms, brass and zinc pigments.

In reply to the prophets of gloom, Mr. Kimberley points out that there is no well established metal or other industrial material known which is not subject to "ups and downs" after its basic market position has been established.

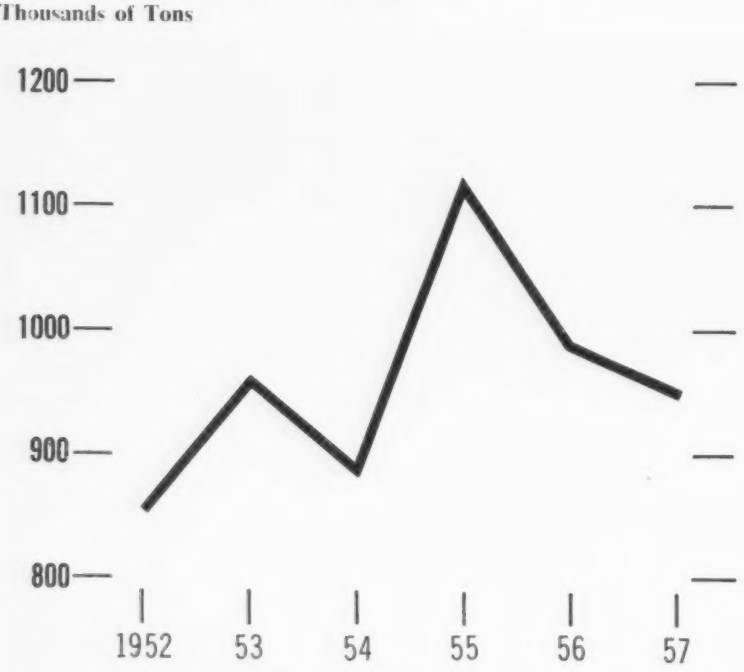
No Federal Aid—"This is not to say that the industry is complacent about either the recent world-wide overproduction of zinc metal, or the obvious need to find new and expanding markets for zinc," he adds.

The industry has all but given up hope for legislative aid from Congress, this year at least, in the form of protective tariffs, production bonuses, quotas, and financial aid for developing high grade ore resources.

Prices Drop—In an effort to balance out supply with demand, several zinc producers recently cut back production from 10 to 25 pct. The cutback came after five price cuts during the last three months totaling 3½¢ a lb failed to stimulate demand. The current zinc price at New York is 10½¢ a lb.

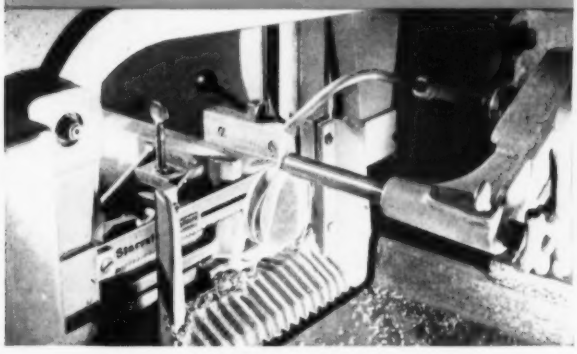
Mr. Kimberley's prediction that 1957 will be a good year for the industry, after all, seems to indicate that the recent furor over tariffs, barter plans, and federal subsidies was unnecessary.

1957 Zinc Consumption Not a Record, But Still a Good Year



Source: American Zinc Institute.

HACKSAWS



NOW COLOR-IDENTIFIED FOR EFFICIENT BLADE SELECTION

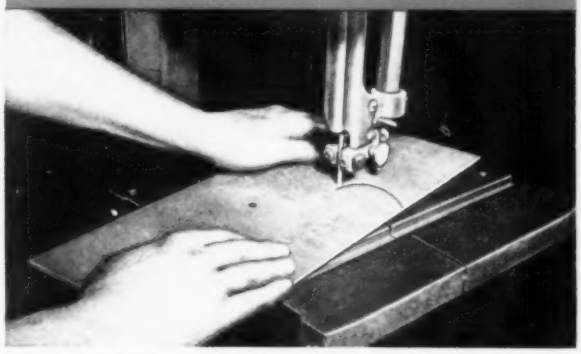
Color-identified to help you select the right blade for any job . . . production-proved for better cutting performance, longer blade life. These new Starrett faster-cutting, longer-lasting hacksaws are now available through your Industrial Supply Distributor in all power and hand sizes and types.

Buy through your INDUSTRIAL DISTRIBUTOR

Starrett

SINCE 1880
WORLD'S GREATEST TOOLMAKERS

BAND SAWS



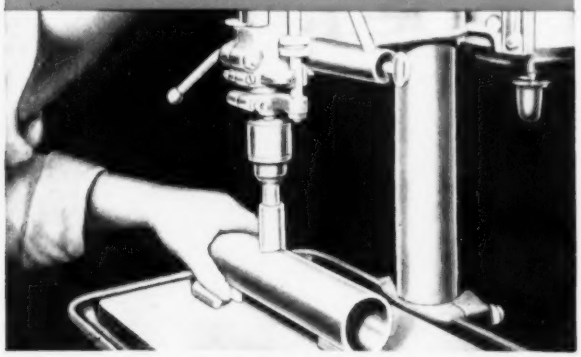
PRODUCTION-PROVED TO CUT FASTER, LAST LONGER

Starrett-engineered blade construction means uniform cutting action, less chance of blade breakage. Starrett makes regular, "skip-tooth," spring temper and friction cutting types for all metal cutting applications as well as regular and "skip-tooth" types for cutting wood, plastics, fibre and non-ferrous metals. Furnished in coils or cut to length and welded, ready for use.

Starrett

SINCE 1880
WORLD'S GREATEST TOOLMAKERS

HOLE SAWS



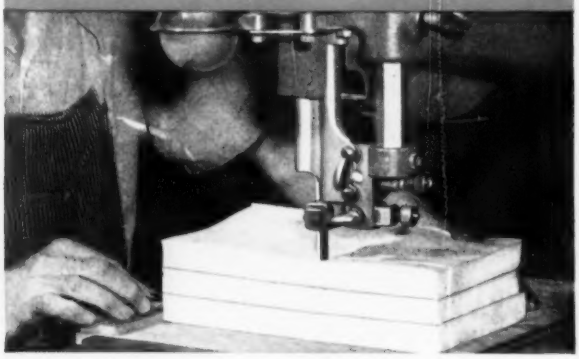
DOUBLE-WELDED AND SHATTERPROOF SIZES FROM 9/16" TO 6"

These new Starrett high speed welded edge hole saws are designed for long, hard, safe use without shattering. Use them to cut clean, round holes in metals, plastics, woods . . . any machinable material up to $1\frac{1}{8}$" thick. Interchangeable arbors hold a wide range of saw sizes. Four different arbors available to fit power tools, lathes, drill presses.

Starrett

SINCE 1880
WORLD'S GREATEST TOOLMAKERS

BAND KNIVES



FOR SOFT OR FIBROUS MATERIALS . . . 3 TYPES, ALL SIZES

Use Starrett FAST-KUT Band Knives for clean, fast, efficient cutting of all soft or fibrous materials. No chips, dust or waste. Ideal for stack cutting, trimming, slicing, cut-apart operations, etc. Available in a complete range of sizes in straight-edge, scallop-edge, or wavy-edge types — single or double bevel.

NEW SAW CATALOG

Describes the complete line of Starrett hacksaws, hole saws, band saws and band knives. Write for your free copy. Address Dept. (1A).

THE L. S. STARRETT COMPANY, ATHOL, MASSACHUSETTS, U. S. A.

McElroy New Defense Chief

President Eisenhower's new Secretary of Defense is Neil H. McElroy, Cincinnati, president of Procter & Gamble.

Mr. McElroy has been officially nominated to replace Charles E. Wilson in the top Pentagon post. He has not yet been confirmed by the Senate, but has conferred with leaders of both parties.

Mr. McElroy will take over in time to become acquainted with budget preparation. The military budget to be submitted to Congress next year will be formulated this fall.

McElroy will have to take a cut in pay from $285,000 per year to $25,000. And he must divest himself of investments in firms with defense contracts.

More Steel Shipped For Construction

Shipments of finished steel products for construction in the first half of 1957 set a new record, according to American Iron and Steel Institute.

First half shipments to all markets was 44,285,435 net tons, close to the record 46,933,786 net tons shipped during the similar period in 1956.

Million More—Construction, including maintenance, received 6,527,669 net tons, nearly a million more than the former record of 5,531,754 net tons shipped during the first half of 1956.

Oil and gas warehouses received a record 1,335,105 net tons during the first six months compared with the previous high of 1,231,963 net tons shipped during first half of last year.

Shapes Set Mark—New half-year marks were set in structural shapes, steel piling and concrete reinforcing bars, oil country goods, line pipe, and electrolytic tinplate.

Three top consumers for finished steel during the half were warehouses and distributors, 8,358,182 tons or 20 pct of total; automotive, 7,250,605 tons or 17.4 pct; and construction, including maintenance, 6,527,669 or 15.6 pct.

Leading Products — Leading products shipped were C-R sheet, 6,126,934 tons or 13.9 pct of total; plates, 5,085,011 tons or 11.5 pct; and H-R sheet, 4,382,177 tons or 9.9 pct.

June shipments of all products this year totaled 7,284,616 tons, compared with 6,972,091 tons during May and 8,077,805 tons during June 1956.

King-Sized Studs

Standard Pressed Steel Co., Jenkintown, Pa., has set up a Precision Stud Div., with separate manufacturing and sales facilities, to produce large-diameter fasteners for power plants, steam turbines, nuclear reactors, chemical process vessels and other large, high-temperature, high-pressure equipment.

The studs, or fasteners—headless and threaded at both ends—will be 72 in. long or more, and weigh as much as 800 lb, be up to six in. in diameter.

SPS assigned $250,000 worth of machine tools to the new division, and has about the same amount of special stud-making equipment on order.

Oxygen for Phoenix

Phoenixville Iron and Steel Co., subsidiary of Barium Steel Corp., will install an oxygen producing plant at its Phoenixville plant.

Ground will be broken in September, with operations scheduled to begin next spring. Capacity will be 7½ million cubic feet. The oxygen will be used for scarfing mill ingots; fabricating for Phoenix Bridge Co., another Barium subsidiary; and for openhearth operations.

The project will cost about $500,000.

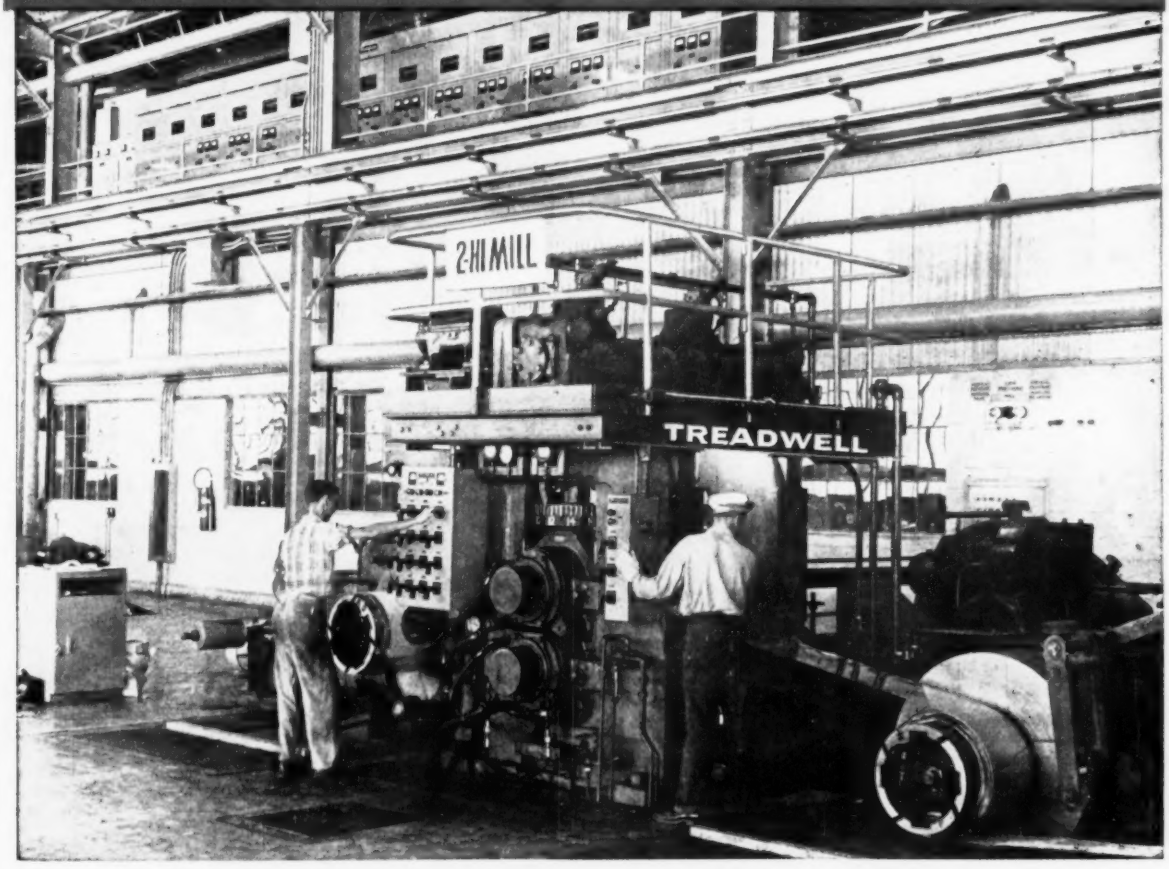
Air Products, Inc., Allentown, Pa., will install the unit, and instruct company personnel in its operation.

Higher Railroad Rates

The Interstate Commerce Commission has authorized general increases in railroad freight rates of 7 pct within and between eastern and western territories, and 4 pct within and from and to southern territory. The railroads had sought boosts of 22 pct and 15 pct respectively.

Combined with earlier, interim increases the new rates will be 14 pct higher in eastern, 12 pct up in western and 9 pct up in south.

Treadwell



Temper or skin pass and cold rolling mills for high carbon, stainless and carbon steel strip complete with coiling equipment.

Manipulators, Mill, etc.
Mills, Blooming & Billet
Mills, Merchant & Bar
Mills, Rod
Mills, Sheet
Mills, Strip (Cold)
Mills, Strip (Hot) & Skelp
Mills, Vertical Edging
Tables, Mill
Tables, Tilting & Lift
Tables, Transfer
Transfers

Coilers & Reels
Conveyors, Coil
Drives
Ejectors, Furnace
Gauges, Shear, Saw, etc.
Beds, Cooling
Beds, Inspection
Bumpers, Furnace
Pushers, Furnace
Repeaters
Handling Equipment (Kick-offs, Pliers, Cradles, etc.)
Steel and Iron Castings
Ni-Hard and Ductile Iron Castings

BETTER GRADE MACHINERY

Treadwell Engineering Company

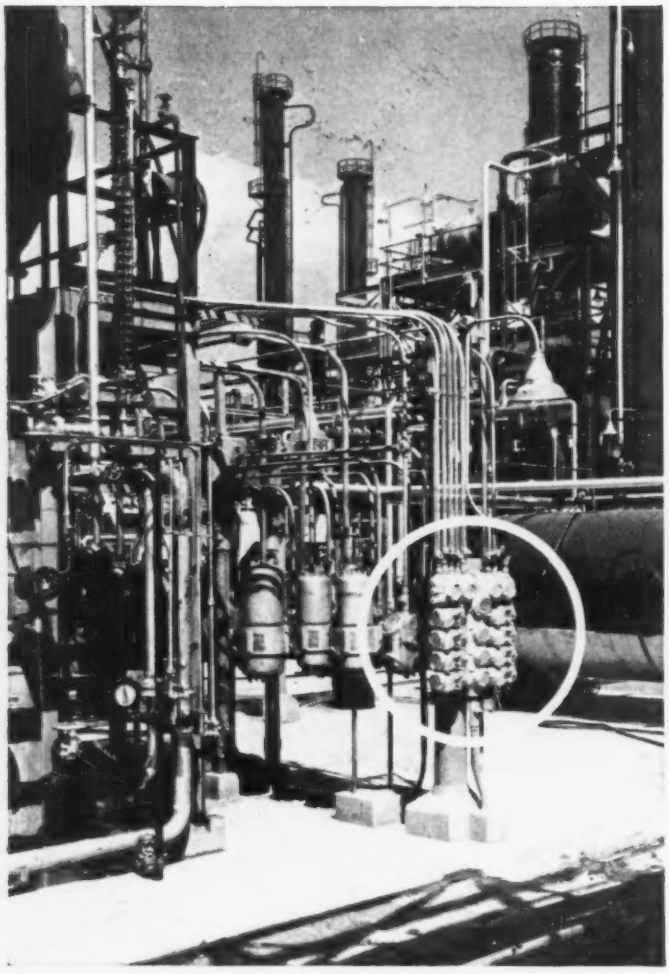
EASTON, PA.

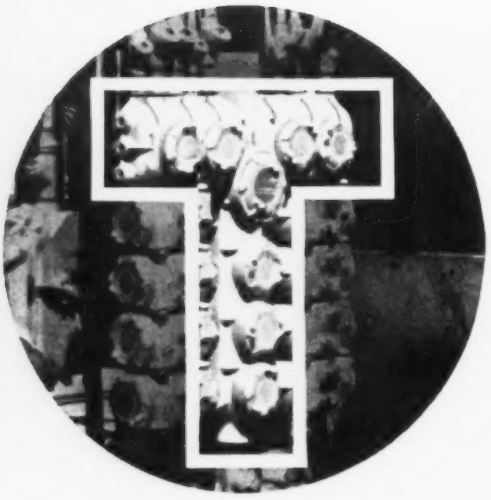
SALES AND ENGINEERING OFFICES:

208 S. LA SALLE STREET
CHICAGO 4, ILL.
CEntral 6-9784

140 CEDAR STREET
NEW YORK 6, N. Y.
WOrth 4-3344

1015 FARMERS BANK BLDG.
PITTSBURGH 22, PA.
ATlantic 1-2883





Crouse-Hinds type EDP explosion-proof panelboard installed and operating in an oil refinery. This 12-circuit condulet is built around a single T-shaped casting (outlined above) of dependable Hanna pig iron.

Crouse-Hinds depends on HANNA PIG IRON to keep explosions under control

The explosion-proof panelboard shown above is manufactured by Crouse-Hinds Co., of Syracuse, N.Y., a leading manufacturer of electrical equipment, specifically for use in hazardous locations where certain flammable gases and vapors are present. The cast enclosure *must* be flame-tight, non-porous and of high quality. That is why Hanna iron was chosen for this very important component.

Hanna makes all regular grades of pig iron, plus HannaTite and Hanna Silvery, and all are available in two sizes—the 38-pound pig and the smaller HannaTen ingot. Every Hanna iron has the qualities that produce denser, stronger castings with uniform machining qualities. To obtain prompt, expert servicing of your iron requirements, just call on Hanna or any of our trained representatives.

THE HANNA FURNACE CORPORATION
Buffalo • Detroit • New York • Philadelphia
Merchant Pig Iron Division of
NATIONAL STEEL CORPORATION

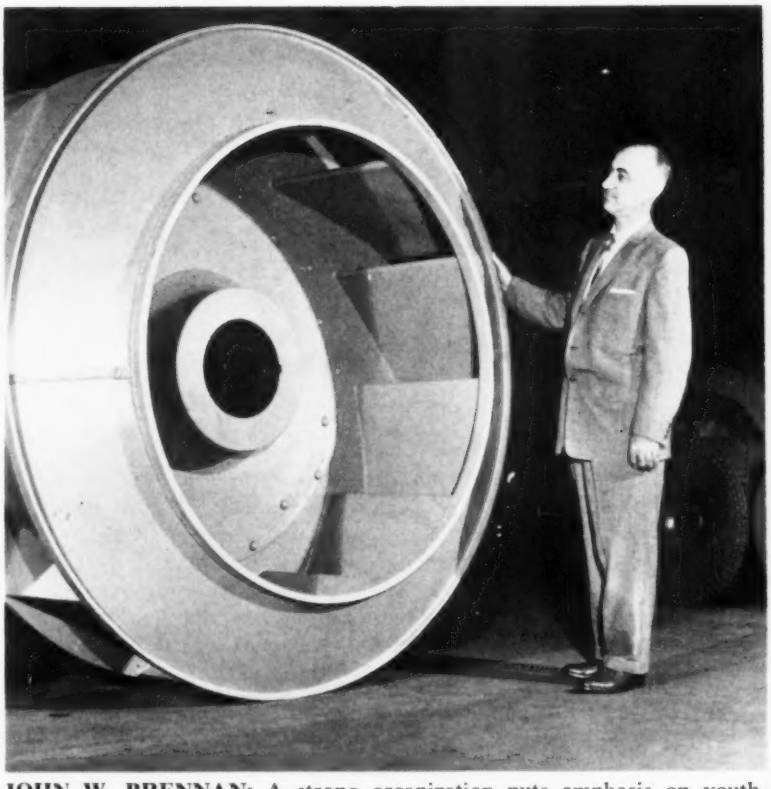
John W. Brennan

A Walk Can Win a Sales Race

The production pace at American Blower's Dearborn, Mich., plant is a fast one.

And John Brennan, the Division's president, leads a busy life.

An occasional time out for quiet reflection, he says, can do a lot of good.



JOHN W. BRENNAN: A strong organization puts emphasis on youth.

▪ Walking through a closed down plant on Sunday may not seem like an ideal way for a man to spend his day off. But to John Brennan, president of American Blower Div., American Standard, it has its rewards.

"At such times I see things I might not ordinarily have time to notice," he says. These things might involve changes in a production process or a re-evaluation of long range company policy.

Stresses Growth—John Brennan is a blend of talent that is becoming the trend in management today: Part professional engineer, part industrial salesman, and part executive.

His philosophy for the long range business picture centers on "growth from within." This growth involves products, physical plant, and most important of all, personnel. New products are developed within the company's established industrial bailiwick "to provide greater opportunities for our own people."

Accent on Youth — "Opportunity," he says, "is no myth at American Blower." Many young engineers apparently are convinced. No less than 116 colleges and universities are represented in the company's engineering ranks.

"We want to have available at all times talented, well educated young men capable of accepting management responsibilities," Mr. Brennan explains. He points proudly to the Division's strong engineering, manufacturing, and sales organization built on prudent use of engineering graduates down through the years.

A One-Company Man — John Brennan himself is a product of the system. He started with the company in 1928 as an engineering trainee. After years in the field as a sales engineer, he was named manager of the Hydraulic Coupling Div. in 1945. By 1953 he had become vice president—engineering. This year, he was elected president.

A vital link in John Brennan's administration is communications, or as he puts it, "Keeping in touch." At weekly meetings, he gets together with his vice presidents to talk over matters requiring departmental coordination. The Division's general business position is reviewed; sales, costs, and profits are reported; plans and goals set.

"This helps keep everyone informed and enables us to pool our talents toward proper growth of our company," he says. What may be overlooked or unresolved at these meetings, Mr. Brennan is likely to decide himself—perhaps while taking a leisurely walk through the plant some Sunday.

Increase the availability of your automatic forging equipment ...at no extra cost!

IF you've invested in automatic forging equipment, don't be robbed of your profits by the steel you're forging. Unless it's uniform, you'll be interrupting production to change your setup. These interruptions take time, limit the availability of expensive automatic equipment.

When you use Timken® steel, you get the uniformity you need. Timken fine alloy steel is uniform from bar to bar, heat to heat, order to order. It makes your automatic forging equipment more available—at no extra cost—because you can forge without interruption.

We assure complete uniformity by taking extra quality control steps. For example, we were the first steel manufacturer in the U.S. to use a magnetic stirrer for molten steel. It distributes alloys equally, keeps temperature uniform, and works the slag continuously.

To assure still further uniformity, your order is handled individually. Conditioning procedures are targeted to meet your end use requirement. To limit variations within an order—as well as from order to order—we stamp each bar to identify its heat.

To increase the availability of your automatic forging equipment —at no extra cost—always specify Timken fine alloy steel. You'll get money-saving performance and uniform results every time. The Timken Roller Bearing Company, Steel and Tube Division, Canton 6, Ohio. Cable address: "TIMROSCO".

TIMKEN *Fine Alloy* STEEL

SPECIALISTS IN FINE ALLOY STEELS, GRAPHITIC TOOL STEELS AND SEAMLESS STEEL TUBING

Big Homebuilding Spurt Unlikely

High down payments and tight money have taken most of the blame for the sag in home building.

Recent easing of terms will disclose the real home market and show how much of the slump is due to financing terms.

▪ The recent reduction of FHA down payments for new homes, along with a slight increase in interest rates, should clarify the housing picture somewhat.

It should quiet the builders, who claim there is nothing wrong with the housing market that easier money won't cure. And it should mollify to some extent those who said higher interest rates would bring out the money to finance home purchases.

No Sure Thing—Don't bet on any big resurgence of home building. It should improve slightly, but not to the extent of a few years ago. There has been little clamor from potential home buyers and quite a bit of evidence that the slump was in order, tight money or not.

This doesn't mean that the home market is saturated. But, like many other segments of business these days, home building would have reached a plateau at about this time, even if tight money had not brought it about prematurely. Granted, the plateau would have been at a higher level.

Little Ready Money—There are too many other factors in the picture. For one thing, there's no great eagerness on the part of the banks to finance homes at even the new permissible interest rate.

With the prime interest rate going to 4.5 pct and an increase in the Federal Reserve Board's discount rate just approved, the new interest rate looks even less attractive from the banker's point of view this week than it did only last week. The prospective buyer may find money hard to get despite the relaxing of down payments and interest rates.

Prices Are Higher—And no one is making any predictions on the buyer's reaction to higher rates, even if he can get the 5.25 pct. Another thing, costs have climbed to such an extent that the low cost home is nearly a thing of the past. There is bound to be a strong element of price resistance, even with the significantly easier terms.

The new regulations should be of significance to the major builders, less so to those not in a position to mass produce large housing projects. Many smaller builders, for example, have even disbanded their organizations and are not likely to return unless a boom of major proportions develops.

Labor Eyes Cost-of-Living

Eye on the Index—Labor has its collective bargaining eye on the cost-of-living clauses in long term contracts. You can look for a new drive to increase the escalator factor in the months ahead.

As you know, most long term contracts provide for an increase, or decrease, in pay rates based on fluctuation of the Bureau of Labor Statistics Consumer Price Index. Steelworkers, for example, gain 1¢ per hour with every increase of the BLS Index equivalent to .4 or .5 points, in alternate sequence, from an established base point.

Want More—Because of recent climbs in the Index, workers have had significant increases this year based on cost-of-living clauses. Now they are after even more.

Behind the move to increase the factor is general conviction that prices will continue to go up for some time. Unions will also try to make a public case that the present rates established in their contracts do not make up for actual increased costs of living.

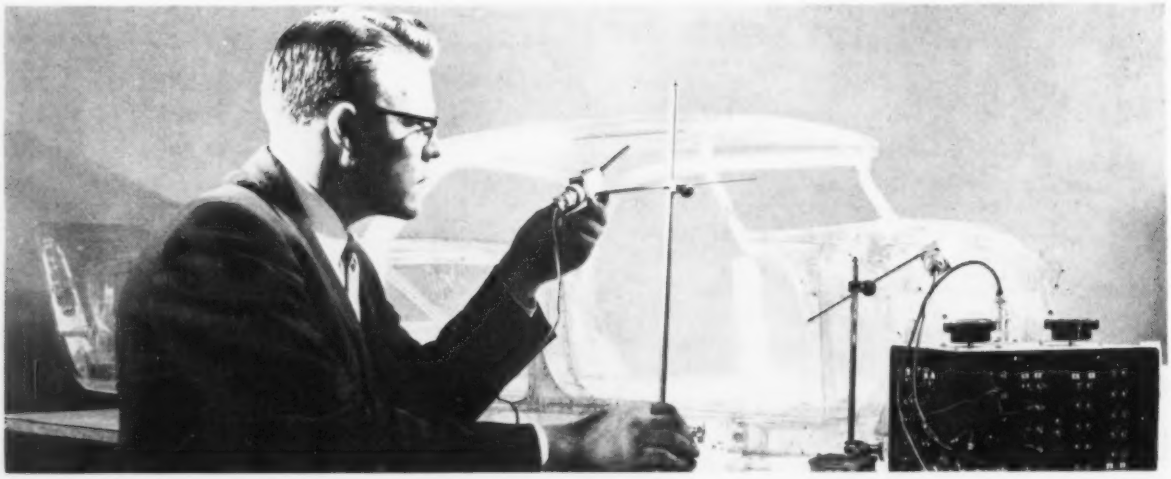
One thing to remember, don't think you are entirely immune even if your company has a long term contract. The United Automobile Workers union has already established the precedent of voluntarily reopening the long term contract through Walter Reuther's "living documents" theory.

Inventories Hold Firm

Geared to Business—In spite of all the talk of inventory cutbacks, they just don't show up in the figures.

Part of the reason for inventories holding level or gaining slightly is due to higher costs. But in general, inventories appear to be adjusted to a high rate of business with little change in the overall picture likely.

Latest figures from the Office of Business Economics (Dept. of Commerce) show all manufacturing inventories rose slightly from $54 billion in May to $54.2 billion in June. All of the increase took place in non-durable goods.



STRENGTH TEST: Chrysler engineer uses plastic model to study body structure. It adds to engineering quality.

Is New Car Quality Slipping?

Rate of Complaints Runs High in '57

When an automaker speeds up his production line, quality is bound to suffer.

The human element, it is found, is the weakest link in the assembly belt.—By H. R. Neal.

■ There is nobody in the universe as irate as the man who has plunked down $3,000-$4,000 for a sparkling new car only to get it home and discover it must have been put together by a three-year-old child.

Letters from less-than-satisfied customers to automakers apparently increased sharply this year. The complaints cover the gamut of missing or malfunctioning parts to parts that fall off or were sloppily assembled. What do the automakers have to say about this? Do they care? What are they doing about it—if anything?

None Escape — Understandably, automakers are reluctant to talk about either the numbers or types of complaints they receive from customers—even off the record. No single car company is free from this criticism.

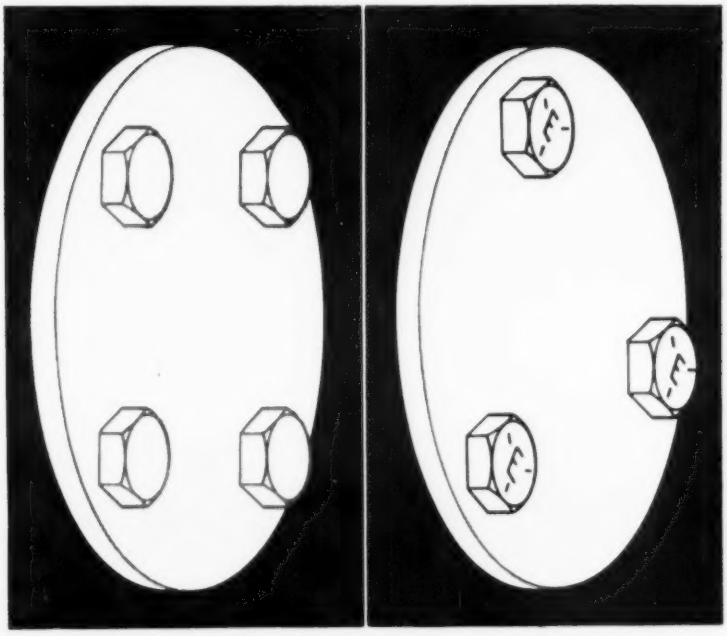
The majority of complaints deal with obvious defects—defects that nearly anyone with passable eyesight can't help but notice. They are paint scratches, missing weatherstripping, door and moulding misalignments, and items of a similar nature.

Human Error Highest — The chief inspector for one automaker frankly admitted he didn't know how to keep cars with similar defects from leaving the plant. It is his job to see to it just such defects are caught and remedied before a car is released.

There are some 15,000-17,000 separate parts that make up the modern automobile. A high number of these parts must be assembled by hand. Parts that are machine manufactured and assembled are automatically inspected. These present few problems and result in few complaints. Engines and transmissions are examples of these.

Fast Pace Toll—The incidence of defects found in cars is always highest at the beginning of a model run. The more extensive the change from the previous year's model, the greater the number of defects. As "bugs" are worked out of a car, the number of defects tapers off to a plateau. It usually takes three or four months to reach the plateau, but the decline is steady. Meanwhile, it is the customer who suffers.

It is painting, upholstery, and assembly that raise the headaches. The majority of work involved here is done by men—and inspected by men. In a modern assembly operation individuals have a minute or



SIMPLE CHANGE SAVES UP TO 40% ON FASTENER COSTS

● High strength bolts deliver more "holding power" per dollar

● Savings in production can also be realized

Figure the cost of fasteners as if you're buying *clamping force* to hold together an assembly. This way, $1.65 worth of "holding power" in machine bolts costs you only $1.50 if bright cap screws are used . . . but only $1.00 in high carbon bolts.

Viewed another way, it means that the stronger fastener can be smaller for a given application, and so costs less. Or it can mean using fewer fasteners.

Either way, you save. On direct fastener costs; on manufacturing. With *smaller* fasteners, there are smaller holes to drill (or maybe you can even go to punching). With *fewer* fasteners, there are fewer holes to fill. (In the sketch above, fastener assembly time would be cut one-fourth.)

• **Case History:** Where an application is suited to high strength bolts the savings can be substantial. One Midwest farm equipment plant that standardized on them saved $12,000 the first year, $28,000 the second.

Manufacturers willing to review their requirements with an RB&W Fastener Man may find it rewarding. He's a technical specialist who can help you save money in assembling your products with standard fasteners. Russell, Burdsall & Ward Bolt and Nut Company, Port Chester, N. Y.

RB&W
112th year

Plants at: Port Chester, N. Y.; Coraopolis, Pa.; Rock Falls, Ill.; Los Angeles, Calif. **Additional sales offices at:** Ardmore (Phila.), Pa.; Pittsburgh; Detroit; Chicago; Dallas; San Francisco. **Sales agents at:** Milwaukee; New Orleans; Denver; Fargo. **Distributors from coast to coast.**

Spin-Lock Screws solve assembly problem

The designer specified countersunk-head screws to be used in a particular casting. The production man had to stake these in to anchor them. But this meant extra operation, made screw removal damaging and difficult.

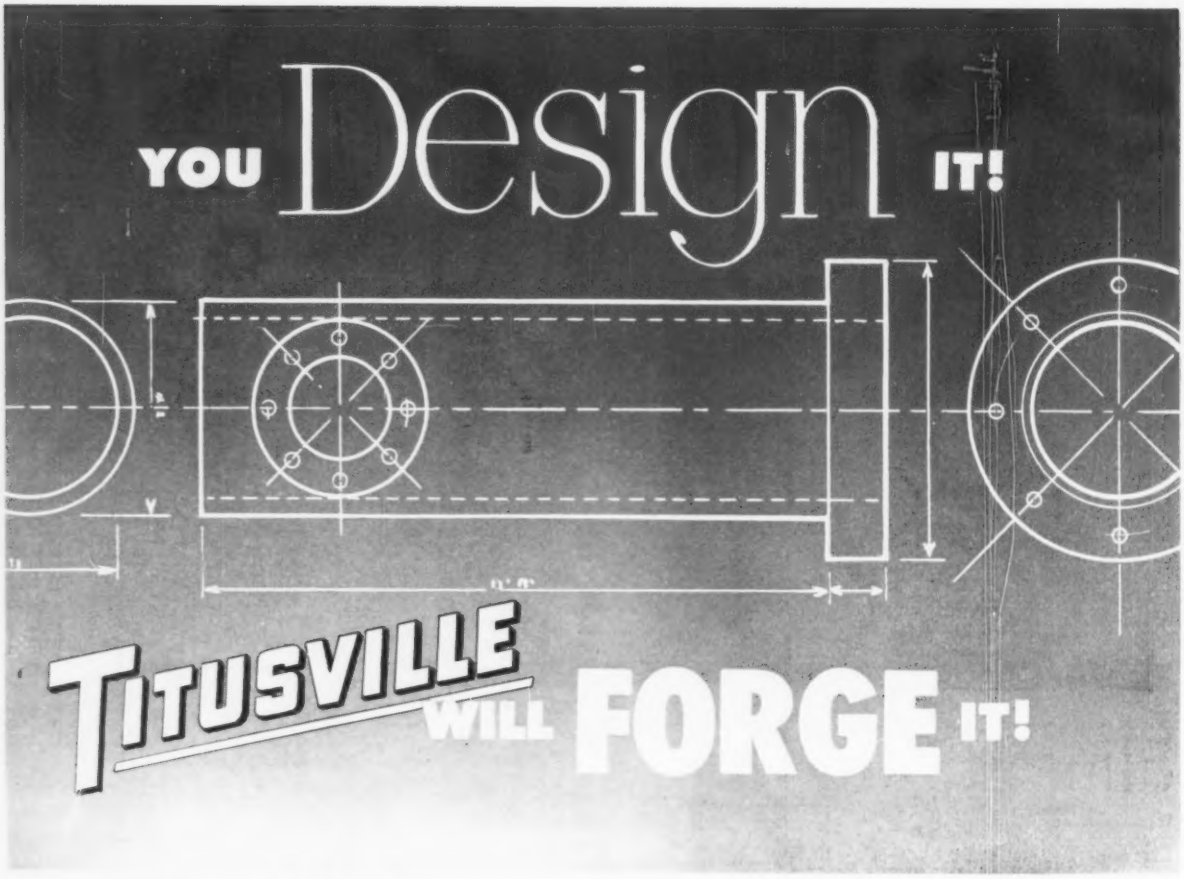
The answer was found in Spin-Lock screws. These have hardened "ratchet-action" teeth that bite in when tightened, take 20% more torque to loosen than to tighten, can be reused. Send for Bulletin.

Silicon bronze fasteners combine desirable features

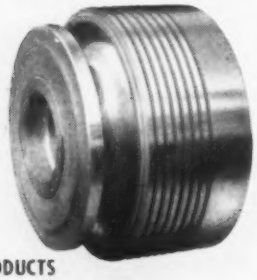
Silicon bronze offers the highest conductivity in fasteners able to withstand high stresses. It resists corrosion, stays free from season cracking, too. It makes ideal fasteners for electrical use where tensile strength is important; or for corrosive environments.

One of the first to develop such fasteners, RB&W cold works them for tensile strength and for clean, well formed threads that don't seize. Oval bolts, hex bolts and nuts, and U bolts available. Specials can be developed.

RB&W FASTENERS—STRONG POINT OF ANY ASSEMBLY



FORGING and PRECISION FINISH MACHINING



Titusville Forge is ideally equipped to perform the most complex heavy forging operations and follow through with heat treating and finish machining to precision tolerances and your exact specifications. Heavy welded assemblies employing forged components is also a Titusville specialty. If your requirements call for forgings, code welding or heavy weldments—see Titusville first!

STRUTHERS WELLS PRODUCTS

FORGE DIVISION

Crankshafts . . . Pressure Vessels . . . Hydraulic Cylinders . . . Shafting . . . Straightening and Back-up Rolls

BOILER DIVISION

BOILERS for Power and Heat . . . High and Low Pressure . . . Water Tube . . . Fire Tube . . . Package Units

CHEMICAL PROCESSING DIVISION

Crystallizers . . . Direct Fired Heaters . . . Evaporators . . . Heat Exchangers . . . Mixing and Blending Units . . . Quick Opening Doors . . . Special Carbon and Alloy Processing Vessels . . . Synthesis Converters

MACHINERY DIVISION

MACHINERY for Sheet and Structural Metal Forming . . . Tangent Benders . . . Folding Machines . . . Roller Table and Tumble Die Bending Machines . . . Press Brakes . . . Punching and Notching Machines . . . Forming Dies

STRUTHERS WELLS Corporation

TITUSVILLE FORGE DIVISION

TITUSVILLE, PA.

Struthers Wells

Plants at Titusville and Warren, Pa.

Offices in Principal Cities

Automotive Production

WEEK ENDING	CARS	TRUCKS
Aug. 10, 1957*	120,436	18,758
Aug. 3, 1957	119,323	20,833
Aug. 11, 1956	108,167	19,493
Aug. 4, 1956	111,157	20,764
TO DATE 1957	4,034,436	695,258
TO DATE 1956	3,817,167	713,493

*Preliminary Source: Ward's Reports

less to perform their job. It takes about an hour to put the 15,000-plus parts together into a finished product. The individual becomes engrossed in his particular task and wouldn't notice an unpainted fender go by. He doesn't have time to look.

Absenteeism Can Hurt — Door alignment is always a problem. It takes time to become an expert doorhanger. If one of the best doorhangers doesn't show up for work, someone must take his place. Although the new man may be experienced, it takes a little time to get warmed up to the job. A half-dozen misaligned doors could pass unnoticed. Paint scrapes and scratches result from careless handling of tools. The culprit in the case doesn't have time to tell a supervisor about it. The inspector is supposed to catch it.

And how about the inspectors? Auto companies have more inspectors going over a car than at any time in the past. Complicated cars of today demand increasing attention. Generally speaking, inspectors have only to look for defects in a limited area, make a note of it, and hang it on the car. With 75-100 cars an hour going by, inspectors occasionally become bleary-eyed no matter how small the area of inspection responsibility.

Better Materials Today — What about reports that materials used in today's cars are inferior to those of pre-World War II days? They just aren't true. The trend is just the opposite. There is an increasing use of costly aluminum and stainless steel for trim, castings and moving parts.

There has not been a decrease in the thickness of metals used in fenders and body panels either. Sheet metal is just as good as it ever was.

Dealers' Role—The auto dealer is not entirely blameless either. There is a certain portion of each car's price that pays the dealer to make a car ready for customer delivery. Some dealers today consider this as "trading" money to give a better deal. Road testing, cleaning, touching up paint and tightening loose bolts is covered by this.

An engine will show an increase in rpm from the time it is assembled to the time a customer buys the car. The dealer is supposed to adjust engine idle before delivery but often doesn't. A new engine begins to wear-in on the test stand at the factory with a 40-60 rpm increase. Mileage put on in moving the car at the factory and by the dealer will add another 40-60 rpm to the engine. By the time the customer gets the car, the engine idles at 100 rpm higher than it did when adjusted at the factory.

Shortage of Mechanics — But dealers have a problem too. There are not enough mechanics to go around. Where there is a need for some 40,000 new auto service mechanics each year, vocational schools only graduate one-third that number. Dealers and manufacturers alike are concerned.

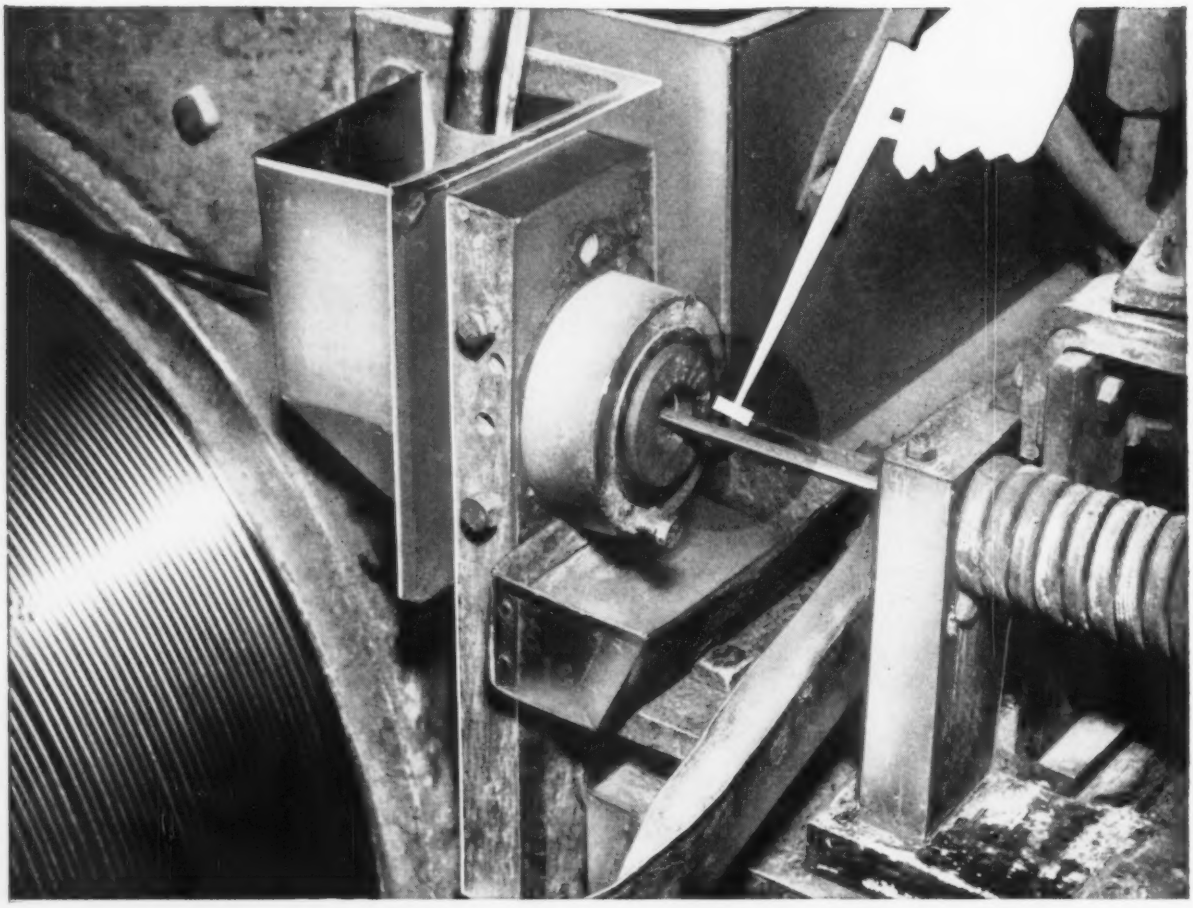
In the end, human frailty and carelessness are the causes of faulty assembly. It is doubtful that the problem will ever be fully licked as long as the human equation is a factor in assembling a car. But auto makers are just as concerned, or more so, than the customer. It costs a lot of extra money to put things right after a car has left the plant—and the industry has 6 million cars a year to think about.

Final Analysis—Where does this leave the customer? Actually, his chances of getting a real lemon are practically nil. He will probably find a number of small items wrong with his car that should have been caught and corrected at the factory —but weren't. He will find more things wrong with his car if he buys it at the beginning of a model year rather than later.

THE BULL OF THE WOODS By J. R. Williams

ON THAT TRIP TO THE STEEL PLANT I TOOK MY OWN CAR AND USED TWO BUCKS' WORTH OF GAS--HAD A BLOWOUT--THAT'S ANOTHER BUCK AND A QUARTER--AND THREE GUYS WERE SO NICE ABOUT GIVING ME INFORMATION I TOOK 'EM TO LUNCH! THAT COMES TO $13.80 AND---
THAT'LL BE HIS LAST TRIP! HE'S RUN OUT OF GAS AND I DON'T MEAN IN HIS CAR!
THERE AIN'T A CHANCE OF THE BULL SIGNIN' THAT EXPENSE ACCOUNT! TAKIN' THREE GUYS TO LUNCH--HAH!
J.R.WILLIAMS
THE BIG BLOW
1957 by NEA Service, Inc. T.M. Reg. U.S. Pat. Off.

A Touch here does so much



KEEP THAT WIRE MOVING FAST...WITH 'AQUADAG'

Something's needed when brass wire breaks at every third spool . . . when dies give up almost as soon as they're broken in.

In one wire mill, two percent of 'Aquadag'® in the normal lubricant changed this picture nearly 1,000%. Now, 24 pounds of 'Aquadag' added to 2,000 gallons of soluble soap provide standard lubrication for drawing brass, bronze and nickel wire down to .028" at 800 to 2,000 feet/minute. Thirty spools are now drawn without interruption and dies last ten times as long. 'Aquadag', a colloidal graphite dispersion in water, remains permanently suspended in the lubricating compound. No trace of graphite is detected on the finished wire.

Metalworking, metal casting and electronics are other fields in which 'Aquadag' and other 'dag'® dispersions have directly and often spectacularly influenced efficiency and production.

Send for your free copy of Acheson Bulletins No. 123 & 426, and see how 'dag' dispersions keep wire moving faster and longer. Address Dept. IA-8.

dag®

ACHESON COLLOIDS COMPANY

Port Huron, Michigan...also Acheson Colloids Ltd., London, England

ACHESON COLLOIDAL DISPERSIONS:

Graphite · Molybdenum Disulfide · Zinc Oxide · Mica and other solids

Offices In: Boston · Chicago · Cleveland · Dayton · Detroit · Los Angeles Milwaukee · Philadelphia · New York · Pittsburgh · Rochester · St. Louis · Toronto

Who'll Develop Atomic Power?

Government Advocates Have the Edge

Majority of Congressional committee favors federal development of commercial power.

Vigorous minority, mostly Republicans, wants less government activity in nuclear power. —By G. H. Baker.

■ It's going to be increasingly difficult, during the next year and a half, for private capital to expand in the atomic power business. Reason is the growing power within Congress for the federal government—not industry—to build new industrial and commercial atomic plants for generating power.

This has nothing to do with atomic power for military projects. The military applications of atomic energy are being directed by the Defense Dept. and the Atomic Energy Commission.

Congress vs. AEC—The point under debate now in the halls of Congress is whether or not the federal government should jump with both feet into the commercial power-generating business.

A majority of the Senate-House Atomic Energy Committee wants the government—not private capital—to build $58 million worth of atomic power generating plants. And the committee expresses its irritation with the Eisenhower-controlled AEC for not moving farther and faster in the erection of government plants for municipalities and power co-ops.

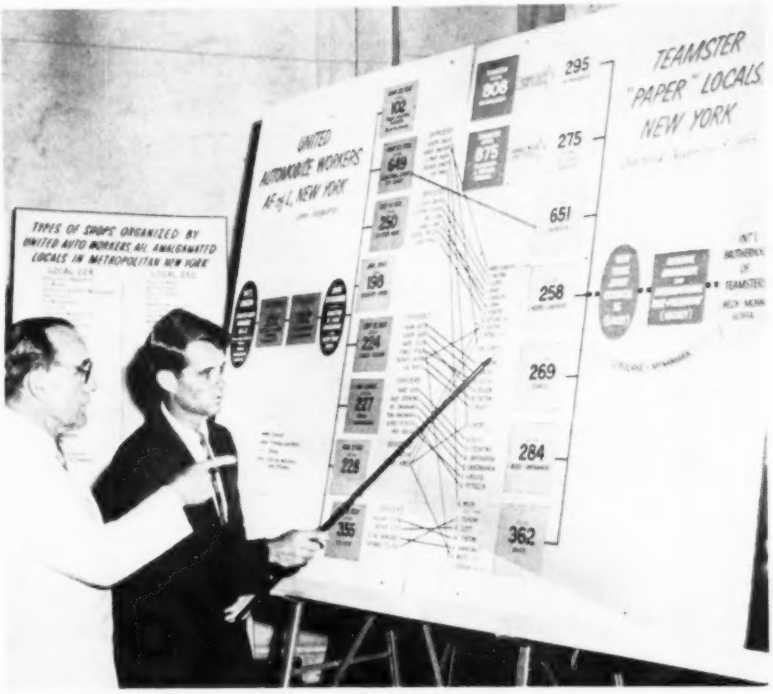
Virgorous Dissent — But a Republican minority is dissenting vigorously. "There are other ways of fostering the atomic industry without having the government enter into all of the expensive construction and operations envisaged," four Republican members declare. And they accuse their Democratic colleagues of showing "a strong bias in favor of public power, government ownership, and socialism."

Big Spending — Atomic power construction legislation now pending in Congress calls for a total of $259.2 million spending for all types of atomic facilities. It is the $58 million of this total for government entrance into the commercial power business that is provoking indignation.

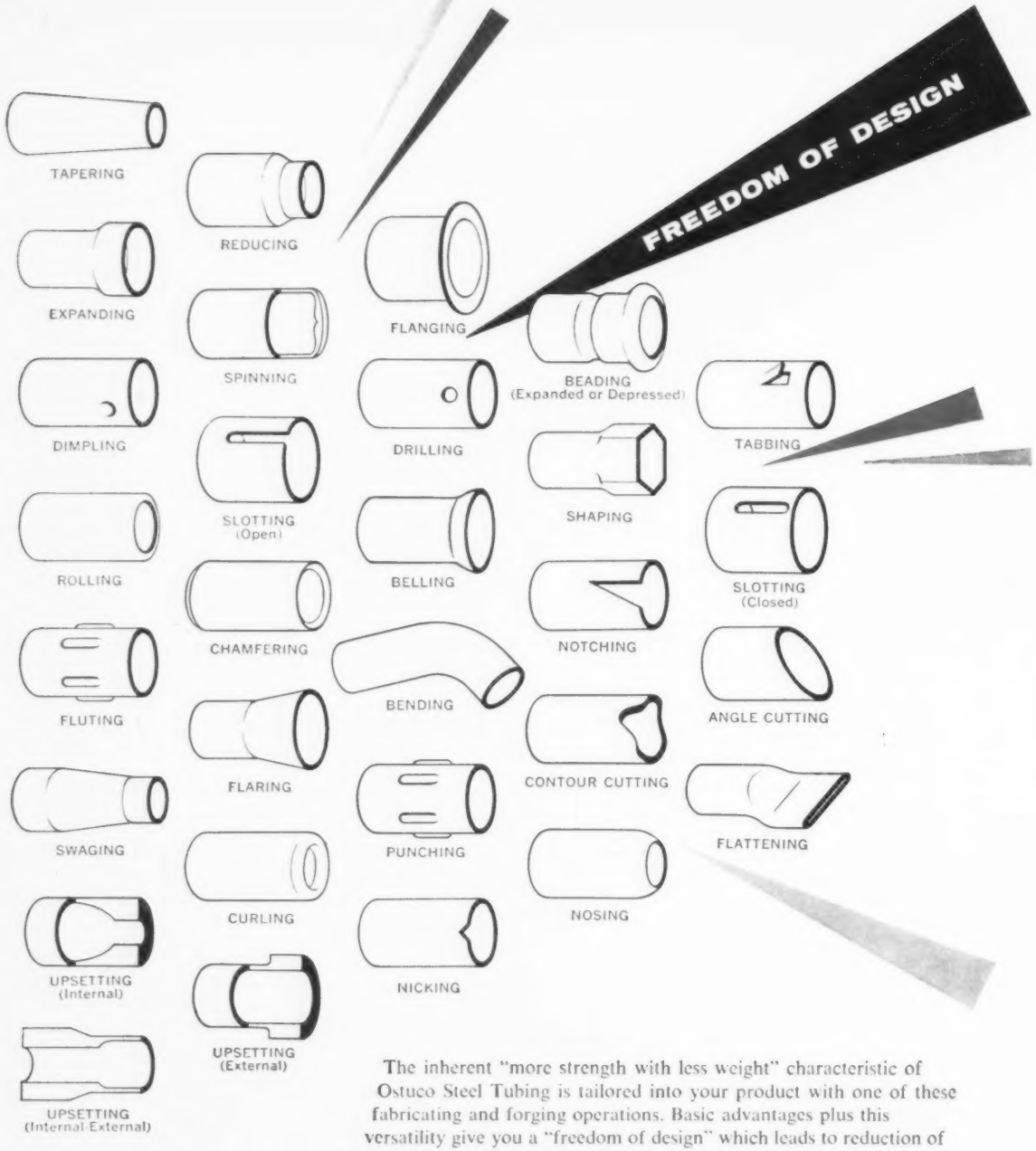
Since government projects pay no taxes, they operate with unusually low overhead. Unburdened with the usual costs of doing business, they can sell power for less than taxpaying power plants charge. For example: Four government-owned atomic power plants now on the drafting boards will be able to set customer rates no higher than those now charged for conventional coal-generated electric power.

It's the same old hassle of private versus public power, but in a new, nuclear setting.

Senate Committee's One-Two Punch



POINTING THE FINGER: Senator John McClellan, left, chairman of the Senate rackets investigating committee, and Robert Kennedy, committee counsel, check a diagram of Teamster "paper" locals at opening of sensational hearings on union operations in the New York City area.



The inherent "more strength with less weight" characteristic of Ostuco Steel Tubing is tailored into your product with one of these fabricating and forging operations. Basic advantages plus this versatility give you a "freedom of design" which leads to reduction of materials, production and labor costs and improvement of your product.

Contact your nearest Ohio Seamless sales office or write direct for full information on Ostuco Seamless or Electric-Resistance Welded Steel Tubing, new NP-60 Steel Tubing (specially processed for machinability), and fabricating and forging facilities available to you.

OSTUCO TUBING

MANUFACTURED IN
SHELBY, OHIO
EXCLUSIVELY BY

OHIO SEAMLESS TUBE DIVISION
OF COPPERWELD STEEL COMPANY

SHELBY, OHIO • Birthplace of the Seamless Steel Tube Industry in America
SEAMLESS AND ELECTRIC-RESISTANCE WELDED
STEEL TUBING • FABRICATING • FORGING

SALES OFFICES: Birmingham • Charlotte • Chicago (Oak Park) Cleveland • Dayton • Denver • Detroit (Ferndale) • Houston Los Angeles (Lynwood) • Moline • New York • North Kansas City • Philadelphia (Wynnewood) • Pittsburgh • Richmond Rochester • Salt Lake City • Seattle • St. Louis • St. Paul St. Petersburg • Tulsa • Wichita
CANADA: Railway & Power Engr. Corp., Ltd.
EXPORT: COPPERWELD STEEL INTERNATIONAL COMPANY, 225 Broadway, New York 7, New York

Lower Ceiling For Aircraft

Cutbacks Will Hit Subcontractors

While all the bad news isn't in yet, there will be 40,000 less aircraft and parts workers by the year's end.

However, companies may ease the blow by just not replacing those who quit. — By R. R. Kay.

■ Retrenchment in West Coast aircraft industries may not be as drastic as would appear at first glance.

But the cold fact remains that by year-end the aircraft and parts industries will employ 40,000 fewer workers.

Part of the extensive cuts in employment will be eased by the rate of quits in the industry. Some 8000 aircraft employees per month normally quit. By not replacing, Boeing alone plans to reduce its employment some 6000 to 8000 by the end of the year.

But with fewer job openings, and layoffs probable, it's doubtful if employees will pick up and leave as casually as many have been doing for years now.

Cut By 20,000—Just before the start of the big layoffs recently, over 20,000 at North American Aviation and its Los Angeles subcontractors, the West Coast industry employed 400,000 workers. That was almost at World War II peak.

At the moment, Pentagon planning calls for a 10 to 12 pct drop-off for the industry. But until the military clears up exactly how its money will be spent, planemakers say they don't know where they're heading.

Many of the cutbacks won't affect the plane or missile makers as prime contractors. Much of the brunt will be taken by subcontractors, with the prime contractors pulling in as much work as possible from subcontractors.

Murky Future — As it stands now, aircraft manufacturers are losing contracts and getting few new ones. One fact is certain: All the bad news is not out yet.

A glimmer of light on this was thrown this week by Air Force Secretary James H. Douglas. He says the production blue print for the West Coast aircraft industry looks like this:

Lockheed: F-104 Interceptor — work "should increase considerably, but not at the rate contemplated in the old schedule."

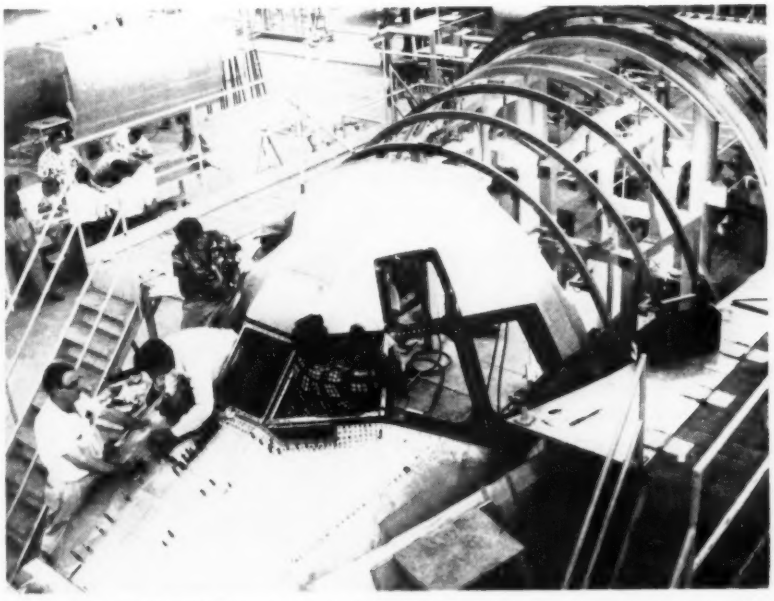
Convair: F-106 supersonic all-weather interceptor — output will go along at the same pace for more than a year.

Boeing: B-52 bomber — production cut from 20 to 15 per month.

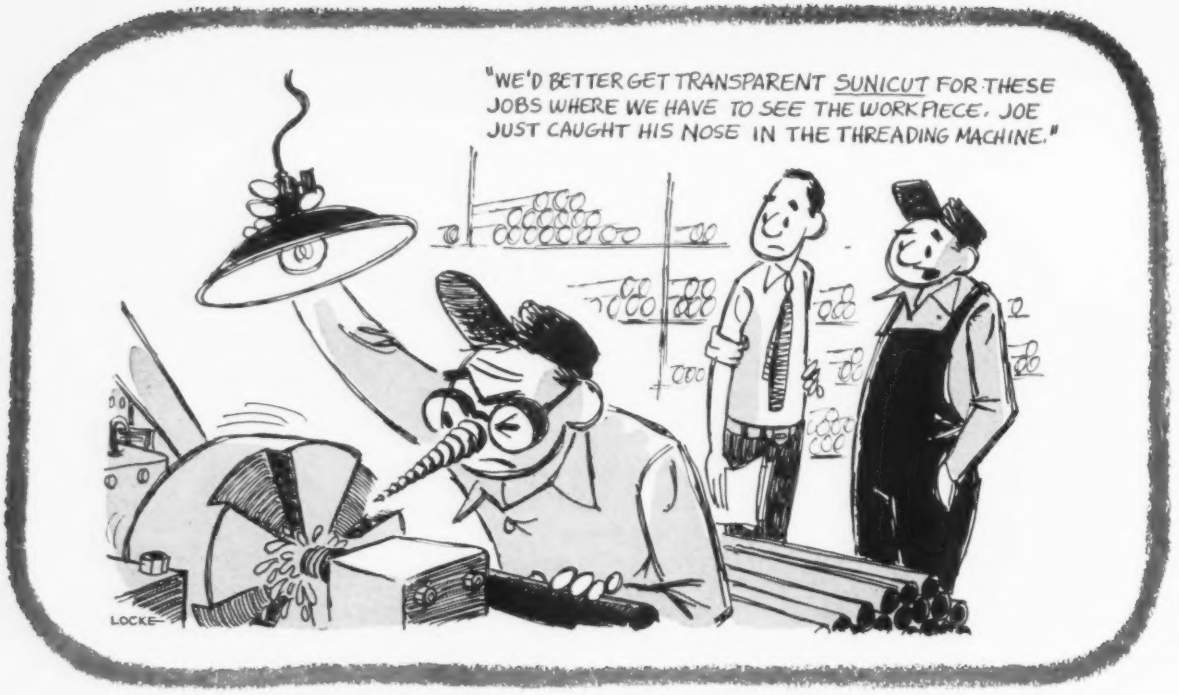
Missile Antidote

An anti-missile missile is in the mockup stage at Douglas Aircraft Co., Santa Monica, Calif. And the company also got a $25 million U. S. Army Ordnance order to build ground launching equipment for the Nike Hercules now in production there. Hercules is an improved version of the Nike Ajax anti-aircraft missile. Its speed and range are greater.

Reserved For Jets Only

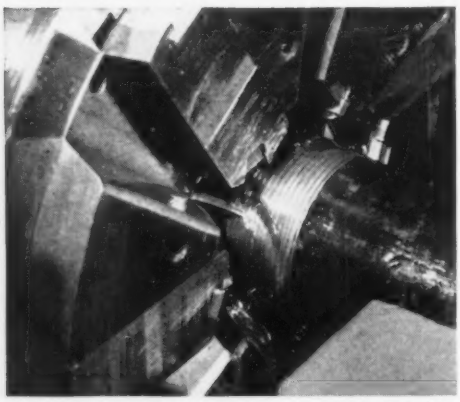


AERIAL TAILORING: Nose section of DC-8 goes into place on assembly line at Douglas Aircraft's Long Beach, Calif., plant, described as first installation built solely for the manufacture of commercial jets.


"WE'D BETTER GET TRANSPARENT SUNICUT FOR THESE JOBS WHERE WE HAVE TO SEE THE WORKPIECE. JOE JUST CAUGHT HIS NOSE IN THE THREADING MACHINE."
LOCKE

For precision cutting...

TRANSPARENT SUNICUT OILS ASSURE YOU GOOD VISIBILITY, PEAK PRODUCTION



Transparent Sunicut oils assure excellent finish in critical operations at close tolerances. Good visibility speeds production.

Transparent Sunicut® oils, including heavy-duty and dual-purpose oils, are available in many grades to suit your specific needs. They give outstanding results...especially where precision cutting is required.

Their transparency takes the "blinders" from work that needs close watching, permitting close product control, faster production, lower unit cost. Machine operators like Sunicut's "cleanliness." Most important, *transparent Sunicut oils assure you of good finishes.*

For full information about Sunicut cutting oils, call your Sun representative, or write to SUN OIL COMPANY, Philadelphia 3, Pa., Dept. IA-8.

INDUSTRIAL PRODUCTS DEPARTMENT

SUN OIL COMPANY

Philadelphia 3, Pa.

In Canada: Sun Oil Company Limited, Toronto and Montreal

SUNOCO®

©Sun Oil Company

German Sales Lose Some Steam

But '57 Output Should Still Top '56

West German machine tool production and sales are giving signs of slowing down.

As domestic business slips, builders rely more on export to help out.—By E. J. Egan, Jr.

■ There are signs that machine tool production and sales in West Germany are slowing down. Domestic orders received by West German builders in April and May were from 18 to 48 pct less than in the corresponding 1956 period.

The Federation of West German machine tool manufacturers still expects 1957 production to be ahead of last year's. But the rate of gain will not be as great as it has been in previous year-to-year comparisons.

45 Pct Exported—For example, in 1952, West German machine tool output (cutting and non-cutting types) was 170,000 metric tons. Booming business pushed annual production to 228,000 metric tons in 1955, and to 257,000 metric tons in 1956. This year, however, total output is expected to reach about 270,000 metric tons, with peak production occurring in the third quarter.

With domestic business slipping as it has been this year, German builders must count more heavily on exports to maintain their production rates. In 1956, 45 pct of all machine tools built were shipped out of the country.

Automation Watchers

"Automation at Work" will be the theme of the official U. S. Government exhibit at the 15th St. Erik's Trade Fair in Stockholm, Sweden, August 31 to September 15. The U. S. display will cover 12,000 sq ft in this, the largest trade fair held in Northern Europe.

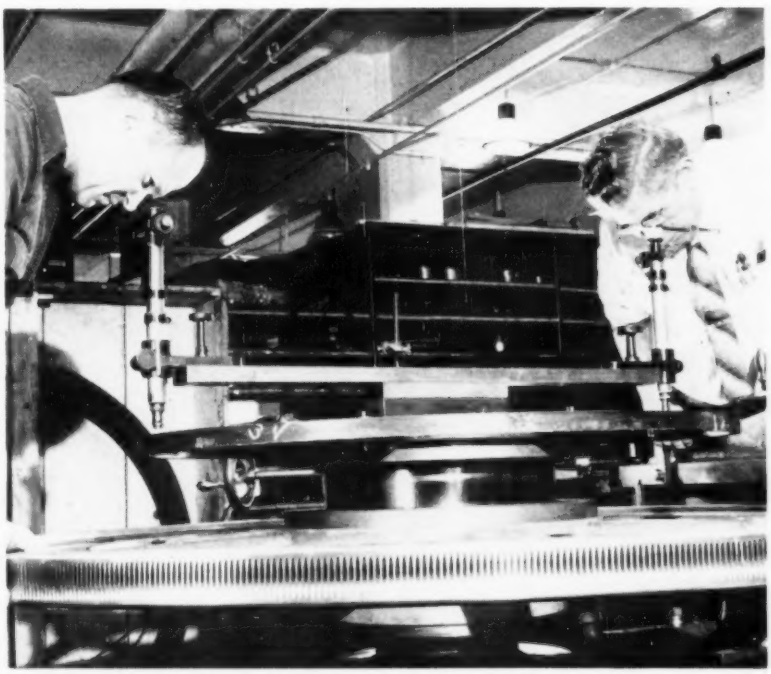
Some 300,000 visitors are expected to see machine tools and other equipment put through their paces by automatic control devices. These will range from simple control units to complex digital and analog computers.

For example, one of the ground floor exhibits will be a numerically controlled lathe at work producing parts automatically. The narrator in attendance will explain how such machines permit job shops to compete with mass-production facilities.

Aircraft Machining

In this country, a symposium on machine tool automation is slated for September 17 and 18 at Los Angeles' Ambassador Hotel. Sponsored by the Radio-Electronic-Television Mfrs. Assn., it will include a study of complex machining problems and materials involved in future aircraft design. Emphasis will be on superalloys.

Astronomical Gear Cutting



FINE-TOOTHED LAYOUT: Warner & Swasey Co. technicians work on huge worm gear, part of a 36-in. telescope being built for Case Institute. Optical instruments help locate positions of 720 teeth. Accumulated error is .0002-in.

INDUSTRIAL BRIEFS

Chair Wrapped Up — P. F. Schreck has been named general chairman of The National Industrial Packaging & Handling Exposition. Mr. Schreck is vice president of The Moto-Truc Co., Cleveland. The Exposition features industrial packaging, package handling, and package transportation. It opens in Atlantic City on Oct. 28, 1957.

First for Dow—Construction of an acrylonitrile plant is scheduled to begin early in 1958 at The Dow Chemical Co.'s Texas Div. at Freeport. Scheduled for completion in December, 1958, the plant is expected to start production during the first quarter of 1959. The product will be among the first Dow Chemicals to stem from acetylene. It is used in the production of synthetic fibers, plastics and flocculants.

Stepping Out — Westinghouse Electric Corp. has completed its multi-million dollar plant near Dover, N. J. This facility will be devoted primarily to the manufacture of electric stairways. The new plant is part of the company's capital expansion and improvement program, which this year will include expenditures of $75 million for new and improved plant facilities across the country.

Keeping Pace—Construction of modern, high-speed rolling mills will get under way at U. S. Steel's Duquesne Works. These mills will replace the present facilities for the production of billets, blooms and slabs. Engineering details for the three mills and construction will begin in about three months.

House of Bricks — The Refractories Div., H. K. Porter Co. has a contract with Starns-Rogers Mfg. Co. for installation of additional manufacturing facilities at Canon City, Colo. Production capacity is expected to increase by more than 50 pct. The plant will manufacture low-alumina silica roof brick by the wet grinding process.

Porter Adds Another—H. K. Porter Co., Inc., has acquired The Cleveland Hardware & Forging Co. for about $3 million. Manufacturers of drop forgings and automotive and commercial hardware and die castings, the firm will be known as the Cleveland Div. of H. K. Porter. Sales of the acquired firm have been about $7 million a year.

Bayou Expansion—The Lummus Co. has placed an order for Petroleum Chemicals, Inc., with General Electric Co.'s Gas Turbine Dept. The order, amounting to over $2 million, is for two gas turbines. They will be installed in the chemical firm's new multi-million dollar installation at Lake Charles, La.

Rolling Westward—The Colson Corp., Elyria, O., will construct a new plant for caster production in Jonesboro, Ark. Colson, manufacturers of wheeled products for institutions and industrial material handling equipment, will continue to have its headquarters in Elyria. The modern 80,000 sq ft facility is scheduled for completion in the fall.

New Name, Same Address—The corporate name of the hermetic seal div. of the Phillips Control Corp., Joliet, Ill., has been changed. New name is Philtrol Seals, Inc., changed from Superior Hermetic Seals Co. Phillips Control Corp. is a subsidiary of Allied Paper Corp.

"All our trend predictions are double-checked."

Showtime for Customers—Formed Steel Tube Institute, Cleveland, has produced a 16 mm sound film. Running time is 25 minutes. The film on welded steel tubing stimulates ideas on how to use tubing to gain manufacturing economies with greater strength, lighter weight, and improved appearance. A booklet, "The Leading Role," based on the movie is also available from the Institute.

Whistle Stop — The Industrial Education Institute along with professional societies, trade associations and industrial publications, will sponsor a series of one day seminars. The seminars will be on advanced techniques in functional drafting. It will open in Cleveland, Sept. 24; New York, Oct. 2; and will tentatively conclude in Baltimore and Chicago on Oct. 29 and 31, respectively.

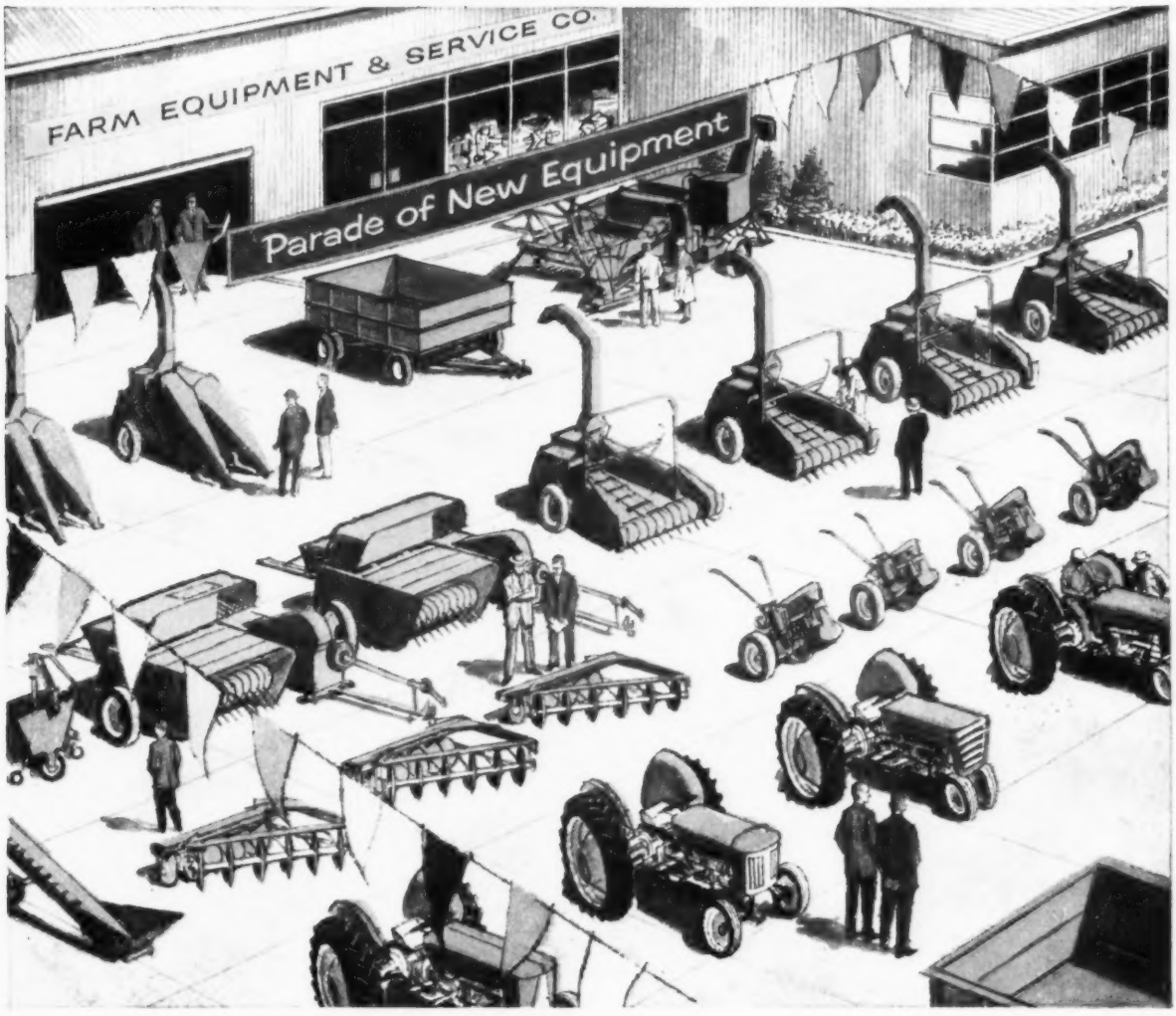
Power Pact—Westinghouse Electric Corp. has a $4 million electrical equipment contract from Aluminum Co. of America. Contract is part of a major power conversion project at Alcoa's Massena, N. Y., plant. Transformers for the project will be manufactured by Westinghouse's Transformer Div., Sharon, Pa. Rectifiers and circuit breakers will be built at the company's E. Pittsburgh plant.

No Slugs, Please—A contract for about $5 million for an "automat" for guided missiles has been awarded to General Electric's Missile & Ordnance Systems Dept. in Pittsfield, Mass. Contract is for development of a shipboard guided missile handling and launching system. It will be for the U. S. Navy's Talos missile.

Windy City Business—Allmetal Screw Products Co., Inc., Garden City, N. Y., has opened a Midwest Division headquarters in Chicago. Allmetal Midwest will provide industrial manufacturers in Chicago with price, delivery and engineering information about their stainless steel fasteners.

STEEL SETS THE PACE in farm equipment...

Farm Equipment manufacturers used 1,082,459 tons of steel last year.
Steel is the **most used metal** in modern technology.



J & L sheet steel sets the pace in helping you control PRODUCT QUALITY

As an integrated company, Jones & Laughlin controls quality from iron ore through every production operation. Rigid quality control of J&L sheet and strip steel assures formability, uniformity and top drawing qualities to meet your most exacting specifications.

J&L sheet and strip are supplied in hot or cold rolled coils and cut lengths, in carbon grades, in widths up to 90" dependent upon gage. This permits forming products in one piece, eliminating welds and permitting more modern styling. Wide widths can also be supplied in high tensile, low alloy grades where higher strength or reduction in section is required.

Write for complete information to Jones & Laughlin Steel Corporation, Dept. 403, Three Gateway Center, Pittsburgh 30, Pennsylvania, or call your local J&L district office.

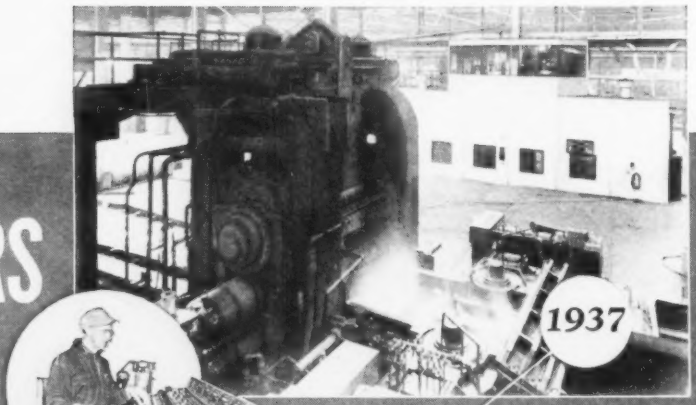
J&L STEEL

Jones & Laughlin

...a great name in steel

20 YEARS OF EC&M DESIGN LEADERSHIP!

IN AUTOMATIC-POSITIONING SCREWDOWN CONTROL



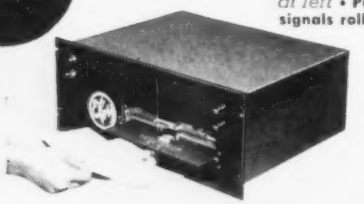
20 YEARS AGO, EC&M Automatic-Positioning Screwdown Control was installed in this mill. It has been doing an outstanding job ever since.

Since then, this same basic EC&M system has been installed in nearly 50 other mills—including blooming mills, billet mills, beam mills, plate mills and reversing roughers ahead of hot strip mills.

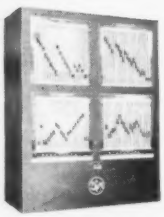
Now, this same proven system has been expanded to provide programming either by punched cards or by slider panels—for new or existing installations, operated from either constant or adjustable voltage.

1957

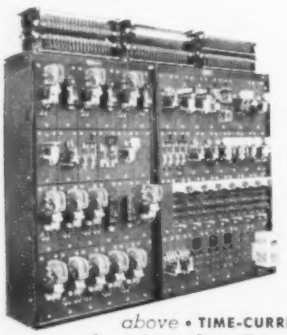
PROGRAMMING NOW AVAILABLE BY PUNCHED CARDS OR SLIDER PANELS



at left • Punched Card Reader automatically signals roll setting for each pass



at right • Slider Panel provides roll settings for 2 complete schedules. Pistol grip switch provides immediate transfer from one to the other



above • TIME-CURRENT Screwdown Controller with Magnetic Amplifier Control and Relay Panel

EC&M DESIGN ADVANTAGES

A single pushbutton controls the most important operation in rolling. Screwdown rolls accurately set for each pass. No schedule to remember.

Ability to change from automatic to manual and back again, instantly available to the roller.

EC&M system is direct reading. No coding and de-coding requiring multiplicity of relays.

Easily serviced by regular maintenance crew. Simple adjustment for roll changes.

Over 900 roll positions obtainable from only 2 small (main and vernier) face-plate, positioning switches.

New operators quickly trained.

They all add up to GREATER TONNAGE— ACCURACY— QUALITY

for the complete story, write for Booklet 9250-PS

THE ELECTRIC CONTROLLER & MFG. CO.
A DIVISION OF THE SQUARE D COMPANY
CLEVELAND 28 • OHIO

7930

J. H. MacMillan, Jr., named chairman of the board and chief operating officer, Cargill, Inc., Minneapolis; **Cargill MacMillan,** elected president; **H. T. Morrison** and **E. E. Kelm,** named executive vice presidents; **R. J. Harrigan,** elected vice president and comptroller; **D. C. Levin,** named secretary; **C. J. Anderson,** named asst. secretary.

Frank Peterson, appointed asst. division manager, Berger Div., Republic Steel Corp., Canton, O.

C. G. Conley, elected chairman of the executive committee, The Mount Vernon Co., Mount Vernon, O.; **J. G. Blessing,** elected executive vice president.

W. P. Hindman, appointed vice president, Advanced Products Div., ACF Industries, Inc.

R. G. Schuler, named general engineering manager, Brush Electronics Co., Cleveland.

I. W. Peterson, appointed Detroit district manager, Grinding Machine Div., Norton Co., Worcester, Mass.

Dr. T. C. Fry, appointed vice president and director, Univac Engineering, Remington Rand Div., Sperry Rand Corp.

G. J. McCaul, elected vice president, contracts and service, Simmonds Aerocessories, Inc.; **M. G. Domsitz,** elected vice president, research and development.

A. J. Grisetti, elected secretary, Mantenance Inc., Wooster, O.

B. W. Eaken, elected secretary and directer, Horizons Inc., Cleveland.

R. H. Reiber, appointed Boston district manager, U. S. Steel Supply Div., U. S. Steel Corp.

J. R. Lorann, elected vice president, manufacturing, Fulton Steelcraft Co., Swanton, O.; **R. C. Higgins,** appointed chief engineer.

A. M. Winchell, elected vice president and director, Waterbury Pressed Metal Co., Waterbury, Conn.

J. A. Fellows, appointed asst. to the division manager, Berger Div., Republic Steel Corp., Canton, O.

C. E. Martin, appointed general service manager and member, executive committee, Cummins Engine Co., Inc., Columbus, Ind.

J. D. Simpson, elected treasurer, National Electric Products Corp., Pittsburgh.

Samuel Salem, appointed vice president, sales and manufacturing, A. M. Byers Co., Pittsburgh.

J. P. Connor, appointed asst. district manager, Pittsburgh, U. S. Steel Supply Div., U. S. Steel Corp.

C. C. Smith, Jr., appointed area sales manager, Atlanta sales office, Westinghouse Electric Corp.

R. C. Moffat, appointed asst. superintendent, vessel dock, transportation and general services dept.,

YOU CAN SAVE TIME, TROUBLE AND COSTS with

Formed Tubes...

★ **Save Time**

We have a huge stock of dies and, when needed, tooling's fast. We also avoid delays by making our own electrically welded steel tubing, sizes from $\frac{5}{8}$" to 3" OD.

★ **Save Trouble**

Long, active experience with all tube forming processes and high standards of quality control make sure your orders will be completed *right.*

★ **Save Costs**

It's routine for formed tubes parts to deliver top performance, save weight, cut costs. Steel, copper, brass, aluminum or stainless tubing fabricated in $\frac{3}{8}$" OD to 6" OD sizes; from 20 to 11 ga. metal.

Formed Tubes, Inc.
806 Prairie, Sturgis, Michigan

Write for FREE Booklet

Maintenance & Utilities Div., Fairless Works, U. S. Steel Corp.

W. J. Faymonville and **M. N. Burleson,** named project directors, Reynolds Metals Co., Louisville, Ky.

E. S. Falsetti, named head, mechanical services, technical services group, Metals Research Laboratories, Electro Metallurgical Co.

I. A. Bickelhaupt, elected president, The Mount Vernon Co., Mount Vernon, O.

S. M. Norwood, appointed asst. to the president, Electro Metallurgical Co.

R. F. Mallina, named research consultant, Gardner-Denver Co., Grand Haven, Mich.

S. B. Sponder, appointed plant manager, Baker Brothers, Inc., Toledo, O.

H. G. Porter, appointed sales manager, Ultra - Violet Products, Inc., San Gabriel, Calif.

M. G. Robertson, appointed branch manager, New York, Inland Steel Products Co.

M. P. Heneghan, appointed asst. manager, Boston district, U. S. Steel Supply Div., U. S. Steel Corp.

E. F. Hahnfeldt, named Pittsburgh district sales manager, Mine Safety Appliances Co., Pittsburgh; **D. F. West,** appointed Atlanta district sales manager.

F. I. Goodrich, elected vice president, administrative, Eaton Mfg. Co., Cleveland.

J. F. O'Hora Jr., appointed general sales manager, Mechanical Handling Systems, Inc.

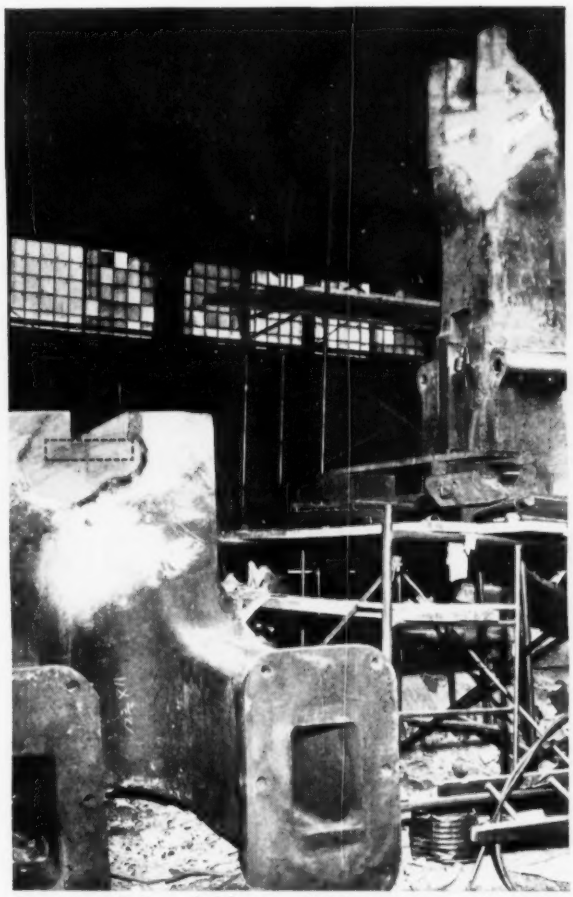
J. W. Browder, named sales manager, Western Design & Mfg. Corp., Santa Barbara, Calif.

J. F. Calvin, named district manager, O. E. M. Div., Acme Industries, Inc., Jackson, Mich.

C. V. Sciullo, appointed asst. manager, Cold Heading Machinery Div., The Waterbury Farrel Foundry & Machine Co., Waterbury, Conn.

J. J. Levand, named vice president, Los Angeles district office, Luria Brothers & Co., Inc., Cleveland.

E. L. Kline, appointed asst. superintendent, openhearth strip and bar mills, Youngstown district, Republic Steel Corp.; **G. J. Erdos,**



Rear view of dismantled hammer. Right-hand frame was lowered to weld the slab of steel—4" x 16" x 72", indicated by dotted line—into the guidepocket section. Left-hand frame was welded in vertical position.

The repaired steam hammer back in operation two months after the breakdown. Approximately 1850 pounds of Tobin Bronze Welding Rod were used. Color indicates location of welds visible from the front.

This mammoth repair saved $115,000... and six months' production time

A 16,000-pound, double-frame steam forging hammer in the plant of a leading tool steel manufacturer broke down early last November. The top portions of both side frames were broken into about 5 pieces each, and several pieces of flange near the steam cylinder were missing. The bed plates were badly damaged. There were between 700 and 800 linear inches of fractures in sections with wall thicknesses of 3 to 5 inches. To repair the hammer seemed a colossal undertaking—but it would take 8 months to get a new hammer into production at a cost of about $140,000.

Maintenance Engineering Corporation, Pittsburgh, Pa., which specializes in the rehabilitation of large industrial equipment, was called in to see if repairs were feasible. After careful study of the damage and an analysis of possible repair methods, their engineers chose braze-welding with Tobin Bronze Welding Rod. They estimated the hammer could be returned to service at a cost of approximately $25,000 or less than one-fifth the cost of a new hammer.

After dismantling and preparation, welding was under way by November 25. It took eight working days using 10 weldors on a 12-hour daily shift. The machine was back in production January 1—two months after it broke down—and is still going strong.

Maintenance Engineering Corp. uses Tobin Bronze Welding Rod for all welding repairs because the welds have good strength and the molten weld metal has excellent flowing properties. The latter enables them to control the weld puddle more effectively in vertical welds and other difficult positions.

There are Anaconda Welding Rods for a wide variety of repair and production applications. They are sold by distributors of welding equipment everywhere. For help in selecting the exact rod to fit your need, see your distributor or write: The American Brass Company, Waterbury 20, Conn. In Canada: Anaconda American Brass Ltd., New Toronto, Ont. 57214

ANACONDA®

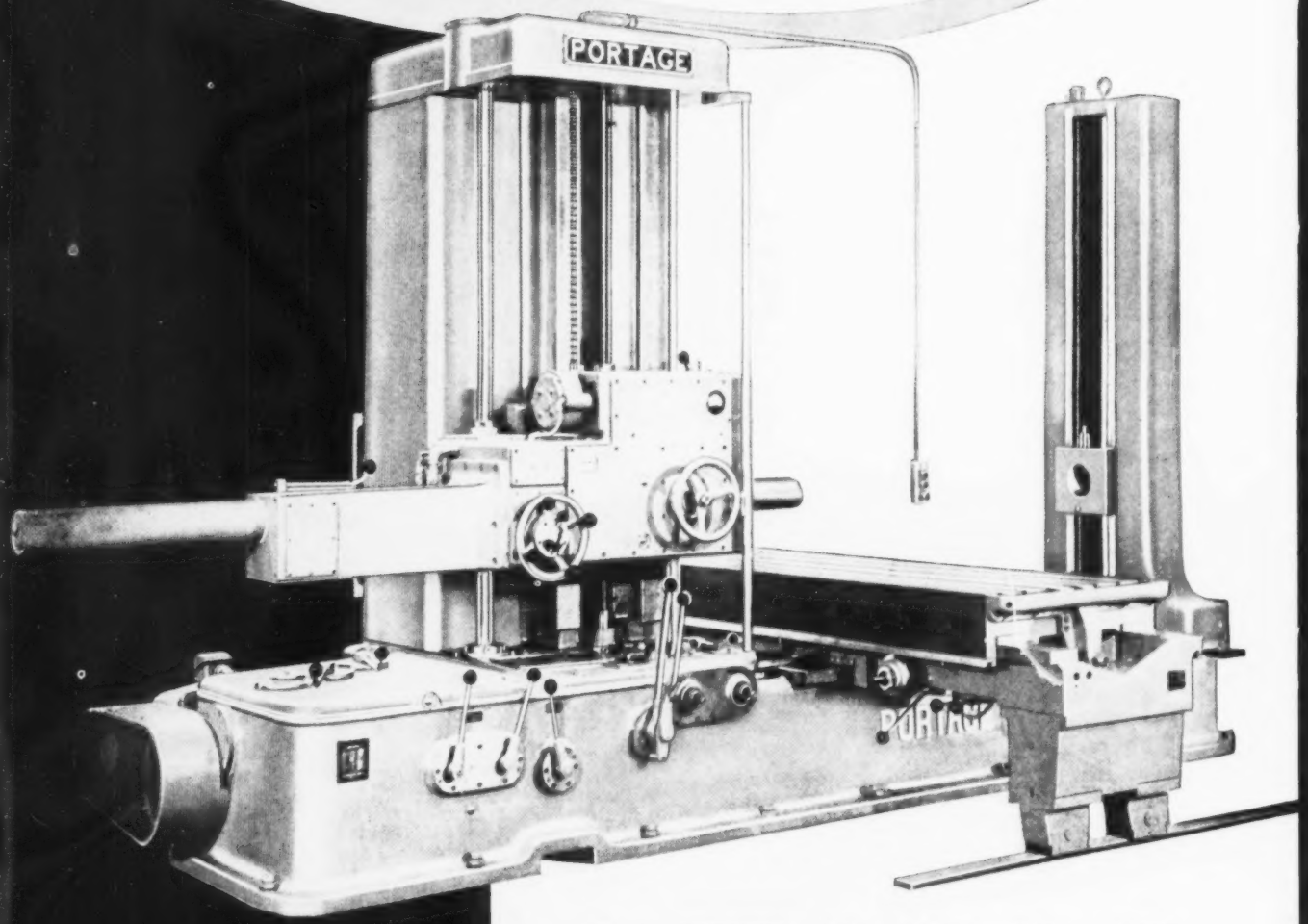
WELDING RODS

MADE BY THE AMERICAN BRASS COMPANY

Sold by distributors of welding equipment everywhere

PORTAGE *Announces...the*

NEW LOOK



The new PORTAGE No. 4 Horizontal Boring, Drilling and Milling Machine has a complete NEW LOOK. A heavier base, column, saddle and head are a few of the new features. The overall "beefed up" machine offers a wider range of versatility. NOW... you can handle the larger work . . . with the smallest possible capital investment. Write for complete information.

THE *Portage* MACHINE CO.

1035 Sweitzer Avenue • Akron 11, Ohio

Representatives in Principal Cities

BUILDERS OF PRECISION MACHINE TOOLS, SPECIAL AND PRODUCTION MACHINERY SINCE 1916

named asst. superintendent, butt and continuous weld tube mill.

R. M. Kinney, appointed southeastern district sales engineer, Electronics & Instrumentation Div., Baldwin-Lima-Hamilton Corp.

W. D. Parsons, appointed manager, Detroit sales office, Rochester Products Div., General Motors.

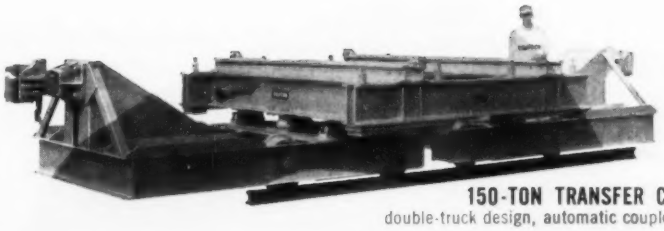
F. P. Flitner, appointed manager, San Jose, Calif., branch, The DeVilbiss Co., Toledo, O.

Dick Mosher, appointed industrial sales manager, General Logistics, Pasadena, Calif.

C. H. Farrar, appointed asst. plant manager, Baltimore plant, National Can Corp.

Robert DeDobbelaere, appointed district sales manager, midwest and southern area, Abrasives Div., Elgin National Watch Co.

G. R. Carpenter, named acting plant superintendent, Tractor & Engine Factory, Minneapolis-Moline



150-TON TRANSFER CAR
double-truck design, automatic couplers.

TRANSFER CARS

CUSTOM-BUILT and quality-built to suit requirements. For locomotive haul or self-propelled. Engineering counsel is provided to assist in the design and application of EASTON custom-built cars for all types of service.

Write or telephone for technical information.

150-TON TRANSFER CAR
designed to negotiate a 300' radius curve.

CUSTOM BUILT TRADE MARK

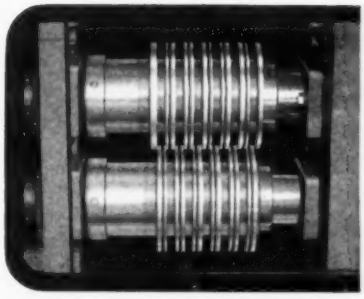
EASTON®
EASTON CAR & CONSTRUCTION COMPANY • EASTON, PA.

A-1055

CUT COSTS 3 WAYS!

WITH

COWLES
SLITTING KNIVES



Cowles knives are so accurate they can be assembled on an arbor quickly with little or no shimming, reducing set-up time. They stay on the job longer, require very infrequent interruption for re-grinding;— and — produce straight edged strip with minimum burr, preventing tie-ups in later forming operations.

For maximum satisfaction, specify Cowles, world's largest manufacturer of rotary slitting knives. Furnished in any face, diameter and bore, in our **Max-Cut; Special Alloy; Super Alloy; Circle C; Super C;** or any special analysis for slitting high and low carbon steels, stainless, silicon or non-ferrous metals. Prompt delivery!

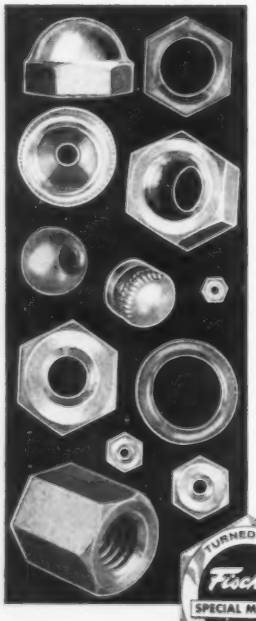
Engineering Assistance On Any Slitting Job.

COWLES TOOL COMPANY
2060 WEST 110th STREET • CLEVELAND 2, OHIO

Specializing in the Manufacture of

ROTARY SLITTING KNIVES • SPACING COLLARS • ROTARY TRIMMING KNIVES • ROLL TURNING TOOLS • EDGING ROLLS • CUT-OFF KNIVES STANDARD AND SPECIALLY ENGINEERED TOOLS FOR ALL FERROUS AND NON-FERROUS PROCESSING, TRIMMING AND FORMING REQUIREMENTS.

Fischer
produces
"specials"
everyday!



"Special" is our middle name. Regardless of your nut requirements, Fischer produces "specials" that will speed your assembly operations . . . and cut your costs.

Brass or Aluminum . . . your nuts will be produced on unique high-speed machinery . . . turned to exacting specifications . . . thereby eliminating "blanks" or rejects.

PRICE . . . you pay no premium. DELIVERY . . . it will be prompt.

Before you place that next order for brass or aluminum nuts . . . the ones you consider "special" . . . send your specifications to Fischer. You will receive immediate attention for price and delivery quotations.

there's no premium for precision with

Fischer

FISCHER SPECIAL MFG. COMPANY

445 Morgan St. • Cincinnati 6, Ohio

C-7668-FS

Co., Minneapolis; **R. S. Paul,** named staff quality control engineer.

J. T. Coe, appointed manager, marketing, Silicone Products Dept., General Electric Co., Waterford, N. Y.

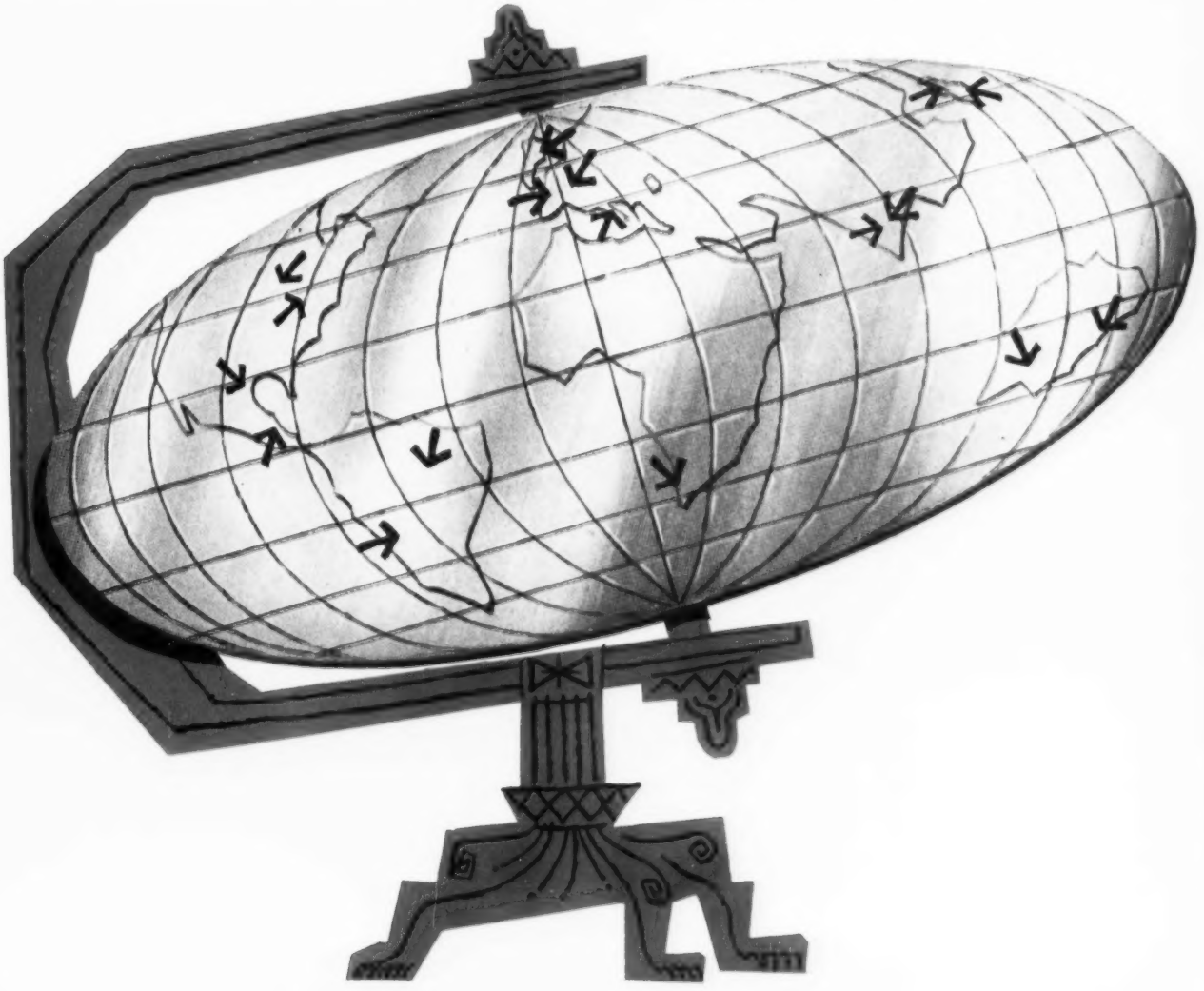
D. P. Hall, appointed asst. to the director, metallurgical sales, Island Creek Coal Sales Co., Pittsburgh headquarters.

W. P. Metcalf, appointed asst. purchasing agent, Air Reduction Co., Inc.

F. E. Kolb, appointed manager, Service Div., Chicago plant, Joseph T. Ryerson & Son, Inc.

G. A. DeLong, appointed manager, Reinforcing Bar Div., U. S. Steel Supply Div., U. S. Steel Corp.

A. G. Galler, appointed field engineer, Teterboro, N. J. district office, Norton Co., Worcester, Mass.; **W. J. Scott,** becomes an abrasive engineer, Chicago.



Throughout the World of Steel

WEAN Creative Engineering

Is Helping Make Better Steels—Faster

Steelmakers the world over recognize the outstanding ability of Wean engineers to create and develop continuous lines for most efficient sheet, tin and strip mill production.

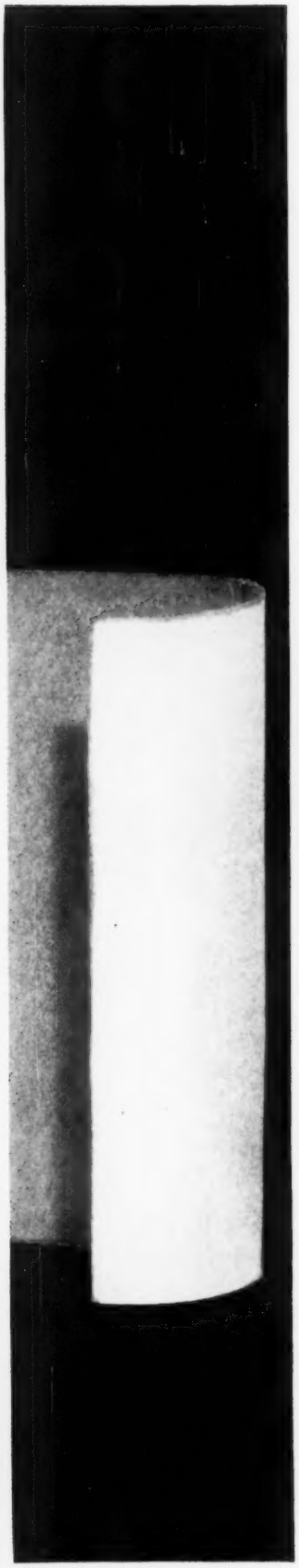
In the steel making centers of some 16 countries, on all seven continents, leading producers depend on Wean for the finest in modern, high speed, automatic steel processing machinery.

Associate Companies: WEAN EQUIPMENT CORP., Cleveland, Ohio, McKAY MACHINE CO., Youngstown, Ohio; HALLDEN MACHINE CO., Thomaston, Conn.

CABLE ADDRESS: WEANEQUIP

The WEAN ENGINEERING CO., INC. WARREN, OHIO

BASO INC.,
GOT RUSTPROOF, GASTIGHT VALVES
WHEN THEY SWITCHED
TO ALCOA ALUMINUM*
SCREW MACHINE
STOCK



Baso Inc., pioneered the thermoelectric controls that make wonderful things happen in America's homes. Gas ranges, clothes dryers, heating units turn themselves on and off automatically.

Brass was formerly used for Baso valve cocks, but these parts were converted to aluminum in conjunction with a complete switch to aluminum for valve bodies. This change entirely eliminated any corrosion problem that might occur between dissimilar metals. With one pass of a single-point tool, Baso gets a surface finish of 16 micro inches in a cycle time of 18 seconds (machine capacity). The lapping operation required with brass was eliminated and so were gaskets. for the metal-to-metal aluminum seal proved to be gastight.

If you machine parts from steel or brass, now is the time to take a hard look at these economic facts about aluminum:

1. Aluminum costs less than brass, and machines just as fast.
2. Aluminum machines faster than steel and won't rust.
3. Aluminum scrap allowance is high.

Now is the time to switch to Alcoa® Aluminum. To help you make that switch, call on your nearest Alcoa sales office. For immediate delivery of screw machine stock, contact your nearest Alcoa distributor. ALUMINUM COMPANY OF AMERICA, 870-H Alcoa Building, Pittsburgh 19, Pa.

IN DESIGN

Russell Matthews, Director of Product Engineering (left), discusses aluminum backing for valve facing with James Dowd, Director of Industrial Engineering. Mr. Matthews says, "Alcoa helped us start redesigning with aluminum back in 1948. Our conversion from brass is now complete."

IN PURCHASING

Mr. G. C. Winters, Director of Purchasing, says, "We have never had to reject Alcoa stock either from the mill or from its local distributor. We find both very cooperative in making deliveries to meet production schedules, thereby saving us warehouse space."

Visit the Alcoa-National Acme Cooperative Machining Demonstration, National Acme Company, Cleveland, Ohio, September 10 and 11, 1957

ALCOA ALUMINUM SCREW MACHINE STOCK

WE CHOSE ALCOA ALUMINUM SCREW MACHINE STOCK

LEARN WHY OTHER COMPANIES HAVE *SWITCHED TO ALCOA ALUMINUM*

Direct quotes from leaders in industry on why they buy from Alcoa. Fill out coupon for your copy.

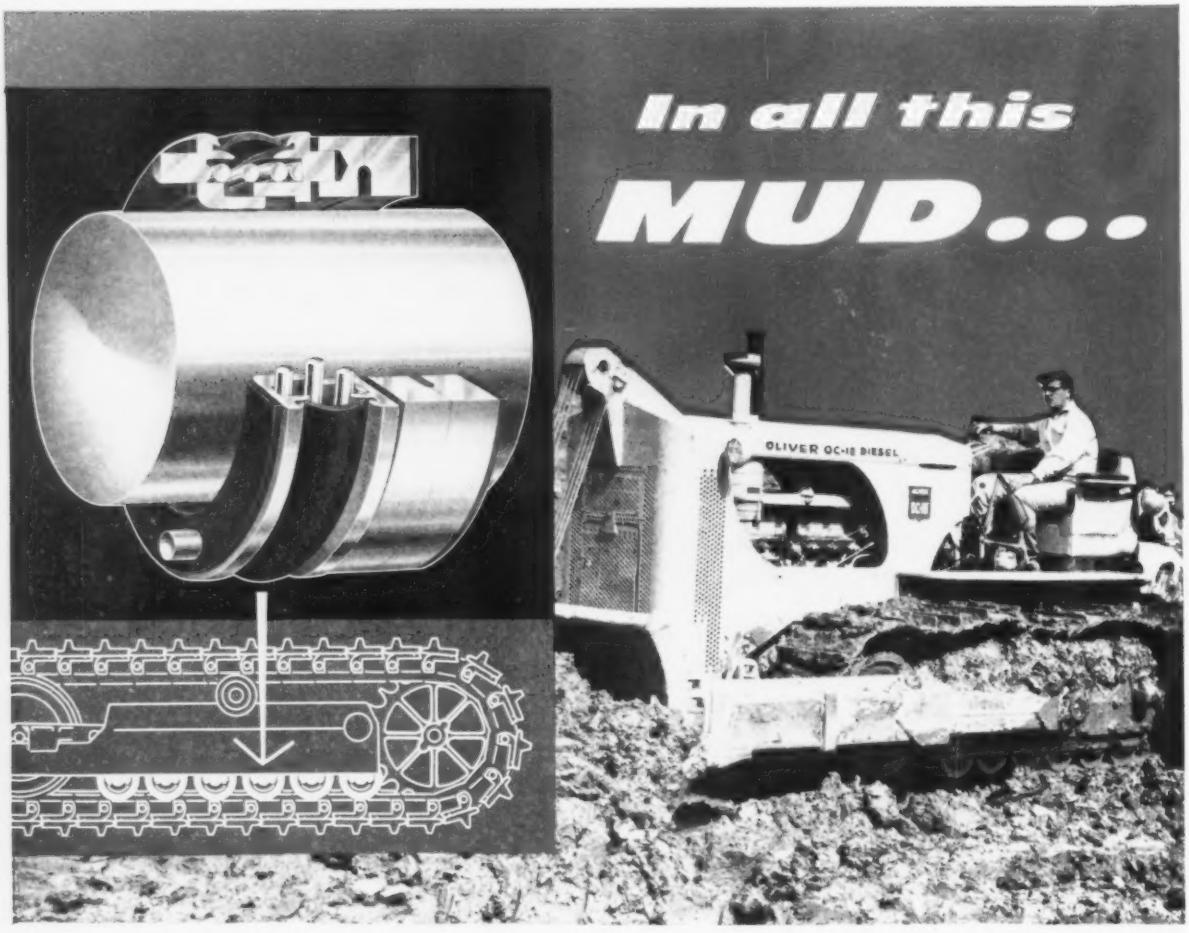
Name_____

Title_____

Company_____

Address_____

City_____ State_____



TRACK WHEEL BEARINGS ARE COMPLETELY PROTECTED

Whether it's tropical muck or crystal sharp Alcan dust, nothing sneaks past the C/R End Face Seals guarding the track wheels of this giant Oliver OC-18 Crawler. And here's why: The mating rings in this steel-on-steel C/R Seal are lapped flat within .000034 inch! They form a leakproof seal so dependable that even under the worst field conditions the oil and the bearings stay clean and the oil level does not require the usual frequent checking. Seal performance like this cuts downtime for lube checks . . . saves big money on round-the-clock operations. This is only one of the hundreds of successful applications for C/R End Face Seals. Equally difficult sealing problems are being solved—and big money saved—with high-speed and high pressure C/R End Face Seals in pumps, tools and aircraft accessory drives, and with medium speed C/R End Face Seals in washing machines and similar home appliances.

If your problem involves leakproof lubricant retention or dirt exclusion, it will pay you to investigate C/R End Face Seals. Write for detailed information.

More automobiles, farm and industrial tractors rely on C/R Oil Seals than on any similar sealing device.

OIL SEAL C/R DIVISION

CHICAGO RAWHIDE

CHICAGO RAWHIDE MANUFACTURING COMPANY
1219 Elston Avenue • Chicago 22, Illinois

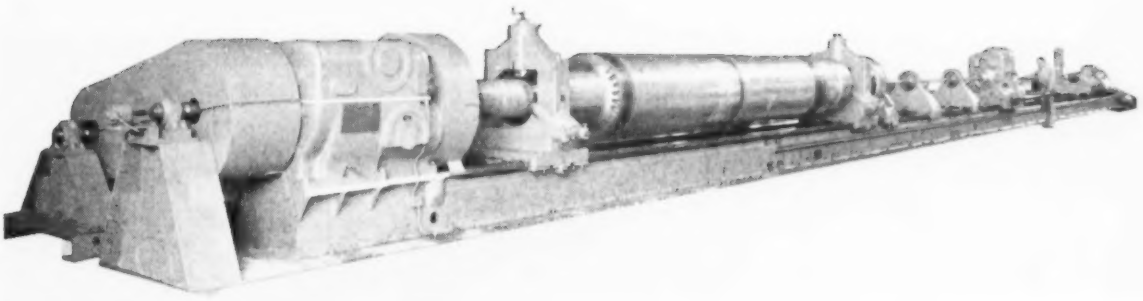
Offices in 55 principal cities. See your telephone book.

In Canada: Manufactured and Distributed by Chicago Rawhide Mfg. Co. of Canada, Ltd., Hamilton, Ontario

Export Sales: Geon International Corp., Great Neck, New York

Other C/R Products

Sirvene (synthetic rubber) molded pliable parts • Sirvis-Conpor mechanical leather cups, packings, boots • C/R Non-metallic Gears



NO PROBLEM HERE: New trepanning lathe handles this 36-ft long, 115,000-lb alloy steel forging with ease, bores a 2¾ in. diam hole at the rate of 2 ipm. Floor-to-floor time to put the hole clear through is 8 hours, compared with at least 130 hours formerly. Well trepanned holes have virtually no runout.

Trepanning: Faster Holes With Fewer Chips

By E. J. Egan, Jr.—Machinery Editor

Boring a straight hole through a long shaft is an ideal setup for a trepanning lathe and carbide tooling.

It's fast, doing jobs in hours that once took several days.

Big forging firms, like Midvale-Heppenstall Co., find trepanning a virtual necessity. Here are some of the reasons.

▪ "In the open die forging business, you've got to be competitive in putting holes through steel; a large percentage of our forgings need to have holes bored in them." To emphasize his point, Herman DePova, works manager of Midvale - Heppenstall Co.'s Philadelphia plant, gestures toward a giant trepanning lathe installed just three months ago.

As he speaks, the lathe is putting a 2¾ in. diam hole through the center of a 36-ft long, 115,000-lb alloy steel forging—a field shaft for a huge electric generator. It's an impressive sight.

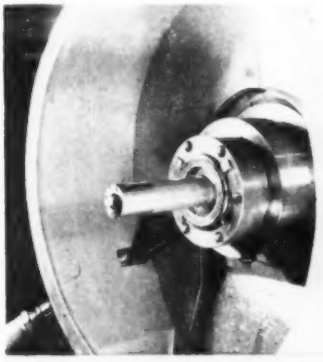
The workpiece is revolving at 200 rpm; the carbide tipped trepanning bar is rotating in the opposite direction at another 200 rpm. That's 400 rpm of effective speed giving the carbide cutter a chance to do its best work.

Rapid Progress—And it does just that, chewing out two linear inches of bore every minute—10 ft every hour—and producing a 1¼ in. solid core as it goes. The core is especially useful for testing and inspecting forging structure.

The company aims eventually to trepan all forgings that require holes from 2 to 24 in. in diam. The new lathe, largest of a battery of four trepanning units in daily use, represents a big step toward that goal.

The technique of trepanning with carbide tools originated in Germany and was brought to the U. S. by the Heppenstall Co., Pittsburgh, immediately after World War II. The Midvale Co., working with the Philadelphia Ordnance District, bought a Heppenstall trepanning lathe in 1951 and trepanned guns successfully during the Korean War.

Team Project — Construction of



IT ONLY TAKES ONE: A single carbide cutter on the trepanning bar circle - cuts the hole to leave a solid core.

this new lathe for larger and heavier forgings was accomplished by a Midvale-Heppenstall Co. team composed of Charles Gordon, general superintendent of machine shops; his assistant, Karl Piatka; Gunter Gilhorn, tool room superintendent; and William Dittgen, works engineer.

According to Gordon, trepanning takes full advantage of the cutting speeds attainable with carbide tools.

Referring to the 36-ft long forging mentioned previously, Gordon says, "We set that job up on the night turn last night and put the first hole in to a 21-ft depth. This morning we turned the piece around to do the last 15 ft. It'll be done by noon."

His estimate is almost perfect; the breakthrough comes a few minutes before 12 o'clock. Result: negligible runout when the mammoth shaft is finally laid on the floor, just eight hours after the original setup was made.

Saves Whole Days—Gordon explains: "With our former practice, it would have taken us 120 or 130 hours to bore that hole. And that's not all. We'd have had to bore the shaft two-thirds of the way, then set it up in another lathe to turn the OD concentric with the bore. Then, we'd reset it in the boring lathe to bore the final third.

"Even so, in a 36-ft long hole, we still might have ended up with 3/8 in. of runout."

His remarks point up the obvious advantages in trepanning forgings of this size: (1) savings of up to 85 pct in hole-boring time; (2) no bore runout worth mentioning.

Gordon adds that the new lathe will handle even bigger workpieces than the one just referred to. It will trepan shafts up to 60 tons in weight, 60 ft long, and it will swing diameters up to 52 in. Holes up to 40 ft long can be trepanned straight through boring in from one end of the shaft only.

Plan Bigger Bores—Tooling on hand for the new lathe permits rapid trepanning of any diameter between 2 and 6½ in. Plans call for extending the high limit to 24 in. soon.

Tough materials don't cause the new machine to balk, either. It's powered to handle any alloy forgings that come its way: 300 and 400 series stainless; or various combinations of chrome-nickel, chrome-molybdenum and nickel-molybdenum steel.

And the harder the material, the better the trepanning job, practically speaking. The carbide cutter works best on metal in the 290-300 Brinell range. At this hardness level chips are not stringy; they break away cleanly and flush out of the bore area easily.

It Looks Easy—Because there is a noticeable lack of noise and vibration while the lathe is operating, and because the speed is so obvious, trepanning looks easy. The casual observer is apt to wonder why the technique isn't used more widely.

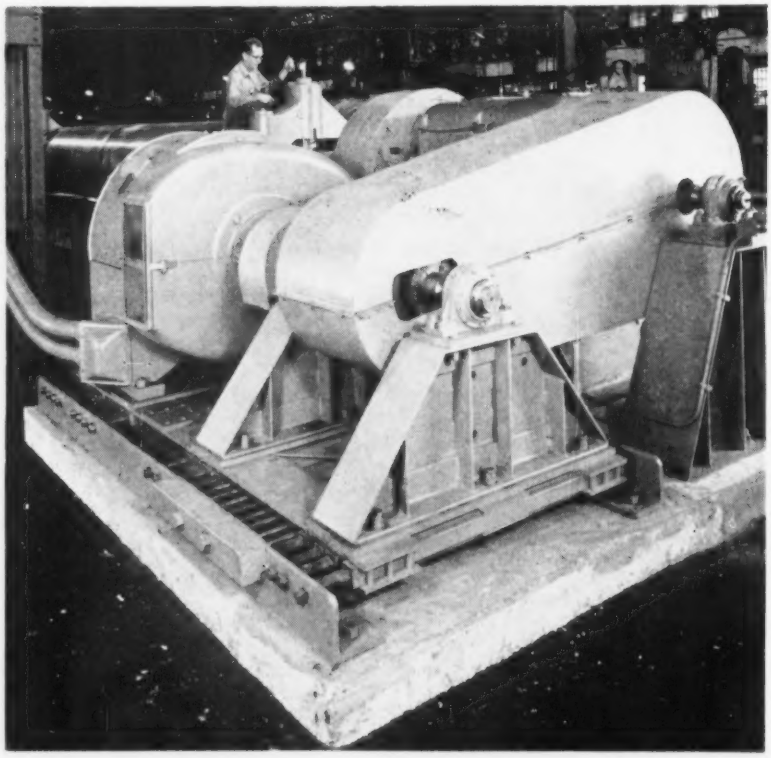
But as Gordon explains, "Looks are deceiving. The machines are expensive, and it takes a perfect combination of several critical factors to do the job right. There's no room for mistakes when you're boring a forging that's worth maybe $75,000."

Ticking off what's needed to trepan efficiently, he lists power, rigidity, cutter design, positive feed, and coolant volume and pressure as the most important items.

Power to Spare—For example, the new lathe's headstock spindle is driven directly by a 200 hp, variable speed, dc motor. No gearing is involved. Spindle speed is infinitely variable from 150 to 1200 rpm. Still another motor of 30-hp capacity is geared to drive the trepanning bar at from 10 to 480 rpm and in counter rotation to the headstock spindle.

The wide choice of speeds with this opposed-motion bar and spindle arrangement makes it easy to choose the best rate for the job at hand. Another benefit: counter rotation produces a straighter bore.

"Rigidity for trepanning requires



READY FOR ANYTHING: With a 200 hp dc motor driving the headstock spindle, there's power and speed for the toughest jobs.

the firmest possible machine anchorage on a massive base," Gordon maintains. "Any sort of floating or self-aligning machine mount is taboo. Steady rests provide the support to keep the workpiece and the trepanning bar from 'whipping' at high speeds."

For bores up to 6½ in. in diam, only one carbide cutter is mounted on the business end of each trepanning bar. A set screw holds the cutter firmly in place, but permits rapid replacement when the tool wears. Actually, tool life is excellent, and best results come when feed is from 0.005 to 0.007 ipr, regardless of the speed used.

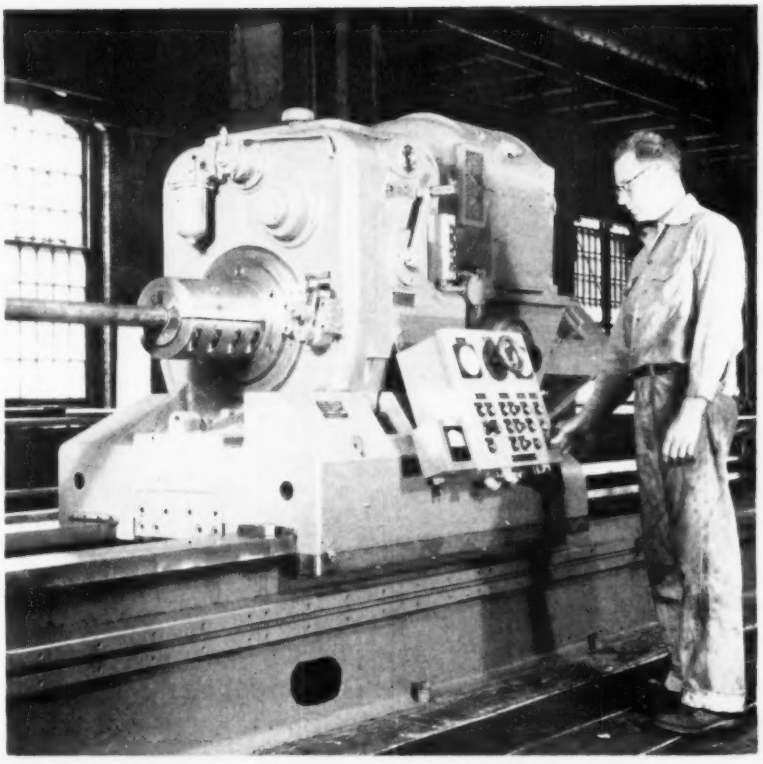
Need Coolant Flood—To cool the bore and flush the chips back through the hollow trepanning bar requires a tremendous volume of coolant. Water soluble fluid is mixed in a 15:1 ratio to give it a heavy body consistency. It's pumped to the cutter end of the bar from a 9000 gal reservoir under the shop floor. Flow is 300 gpm at 600 psi.

Chip-laden coolant emerging from the trepanning bar is screened before it returns to the reservoir. A series of baffles in the huge tank reduce coolant agitation so that entrapped air bubbles dissipate more rapidly.

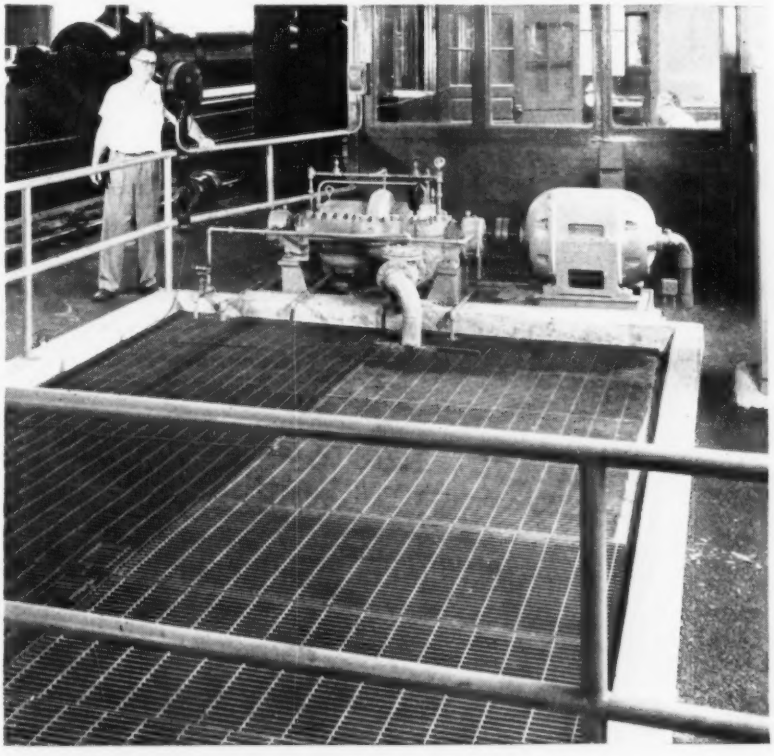
Under Gordon's supervision, trepanning is a valuable production tool for the Midvale-Heppenstall management team which took over the reins of the former Midvale Co. in January, 1956.

Harry Davidson, M-H vice president, sums it up this way: "We're always looking for ways to improve our products and our service to customers. Trepanning has been a big help on both counts in the past, and this bigger lathe will help us much more. It's running steadily, two shifts every day, five days a week."

Reprints of this article are available as long as the supply lasts. You may obtain a copy from Reader Service Dept., THE IRON AGE, Chestnut & 56th Sts., Philadelphia 39, Pa.



FOR STRAIGHTER BORES: Speed and feed of the rotating trepanning bar are controlled from the panel mounted on this drive unit.



A MAJOR ITEM: Coolant is pumped from a 9000 gal underfloor tank at 600 psi pressure to cool the work and flush out chips.

Vacuum Lift Speeds Handling of Sheets On Turret Punch Press

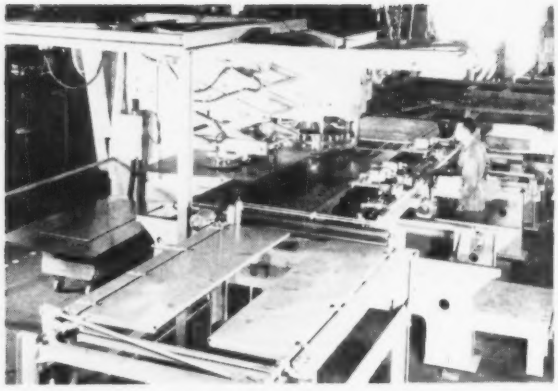


FIG. 1: As the operator punches a window opening in a 24 x 60 in. steel door panel, scissors-type vacuum lift picks a 48 x 84 in. sheet from stack of mixed blanks at rear and left of press, moves forward on conveyor and hovers near work loading table.

By E. J. Egan, Jr.—Machinery Editor

There's no longer any need for two men to load and unload large sheets for turret punch press operations.

A vacuum hoist and a trapdoor unloader do the job automatically. The setup is safe, sure and fast. Here's how it works.

▪ Solve a problem for one customer and you're apt to find that many others have been looking for the same answer. That's what happened recently when the Wiedemann Machine Co., Philadelphia, added an automatic sheet loader and unloader to one of its large turret punch presses.

The attachment was designed to save a customer the labor of two men in loading and unloading large (up to 4 x 7 ft) steel sheets. With the new setup, a vacuum hoist picks one sheet at a time from a ready stack and delivers it via a short rail conveyor to the work loading table of the press.

Finished work is dispatched from the work loading table to a trapdoor device which drops the punched-out sheet onto a stack below. Demonstrations appear to have impressed many observers.

Cycle Is Fast — The automatic loading and unloading cycle takes about 30 seconds. Interlocks prevent a fresh sheet from being dropped onto the work loading table until finished work has been discharged from that location. The press operator has this material handling function under control at all times and needs no assistance.

Two vacuum disks on the loading unit grip each sheet with a force of 25 in. of mercury. Moreover, disk spacing is such that the loader can pick up various sizes of sheets from a mixed stack without difficulty.

Two More Ideas — Besides the automatic loader and unloader, the press delivered to this particular customer has two other innovations for easier handling of small parts and thin sheet.

One is a set of rolls that give extra support to workpieces while they are being punched. As the clamped sheet, supported by these rolls, moves in toward the punching turret, the rolls dip downward out of the way.

The other new feature is a tilting roller table to the right of the turret press. When finished work (still firmly clamped) is withdrawn from the turret area and moved onto this table, it dips downward to the right. This causes punched-out sections to drop free of the sheet and roll into a scrap bin.

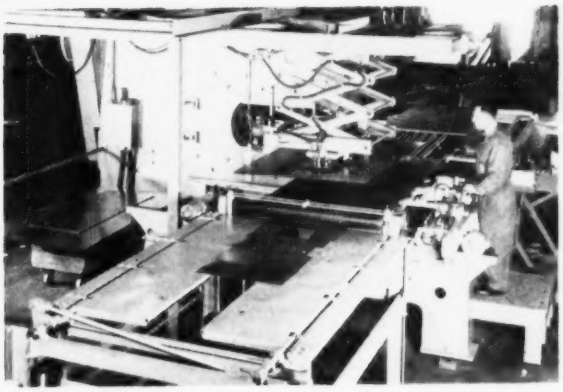


FIG. 2: Operator steps from punching-control station to work-loading table and feeds the small door panel into rolls which discharge it to the trapdoor-type stacking unit. Vacuum lift then descends to drop the large sheet onto the work loading table.

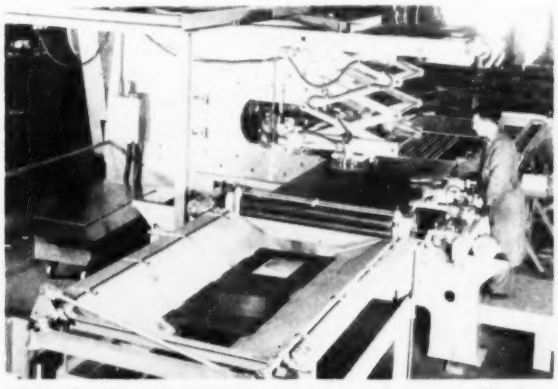


FIG. 3: Trapdoors automatically drop small door panel through onto stack underneath. Vacuum lift, having released large sheet so it can be clamped for punching, ascends, retreats along conveyor and prepares to pick up another sheet from the stack.

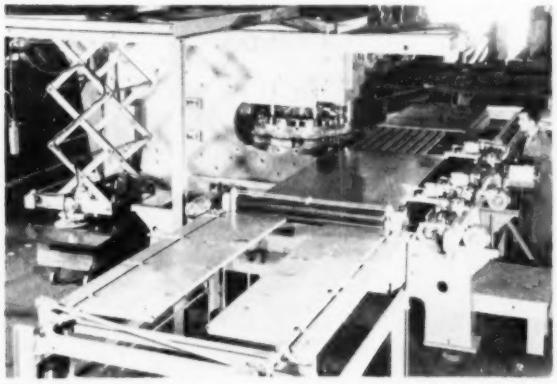


FIG. 4: With trapdoors back in "ready" position, and the large sheet clamped on the direct-measuring gage for step-by-step punching, the operator returns to his control station. He then uses printed instructions to coordinate punching operations.

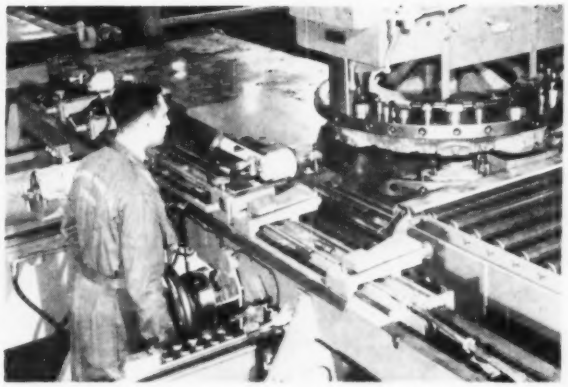


FIG. 5: Work support rolls in front of direct measuring gage drop out of the way as panel moves toward turret. Punches in 24-station turret "bite" outline of window opening as operator cranks the workpiece in, out or crosswise in short, rapid steps.

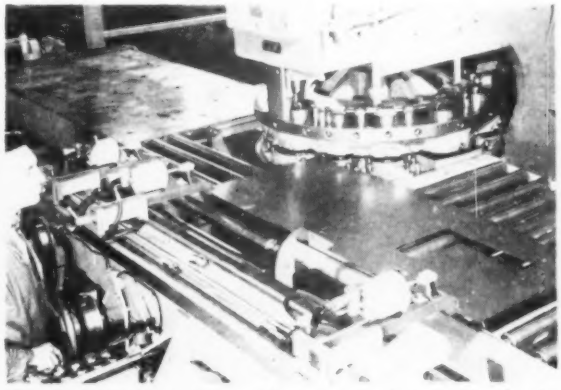


FIG. 6: With window outline punched, operator backs carriage away from the turret. He moves the still-clamped door panel to the right, onto the new tilting roller table. As the table tilts downward, the punched-out section rolls into a scrap bin.

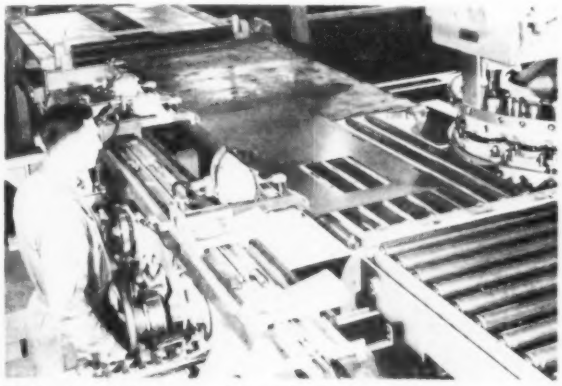


FIG. 7: With scrap disposed of, finished panel moves left toward work loading and unloading table. It will be unclamped and fed to the trapdoor stacker while the vacuum lift provides a new blank. Note full set of work support rolls in front of turret.

Scrap Refinery Controls Smoke With Water Scrubber

By L. Bykowski—Plant Superintendent, M. Pashelinsky & Sons, Jersey City

When an industrial operation releases heavy smoke, it's bound to cause trouble with neighbors.

Yet, there's no need for it. Modern smoke control equipment can handle the toughest situation as an everyday low cost routine.

▪ Whenever you burn or melt scrap metal, you are going to get smoke. The amount and intensity depends, of course, on the condition of that scrap.

One thing is sure: If you get thick, dark smoke and cannot keep it under control, you are going to have a tough problem keeping peace with your neighbors.

This was the experience at M. Pashelinsky & Sons, Jersey City. Despite efforts to solve the problem, the situation grew steadily worse until local authorities forced the plant to close down.

In this critical stage the company looked into a special machine that scrubs contaminants from gas by hydro-compressing it through a multiple tube system.

Refines Scrap—The firm melts and recovers various alloys from nickel, nickel-copper and cobalt-base scrap. On an average day 15,000 to 20,000 lb of scrap are refined.

The smelting process starts with crushed or whole metal turnings, or scrap in spatter form. A one-ton Moore Electric Furnace melts the scrap for a near-capacity melt of 3000 lb.

The burning of this scrap produces a great deal of smoke, dust and non-toxic fumes. These contaminants are hard to control because they consist mostly of submicron size carbon, metal oxides and dirt.

The scrap frequently is saturated up to 10 pct with residual lubricants and processing fluids. When this oily scrap is charged into the furnace, the burning gives off a sudden dense, dark discharge.

Neighbors Complain — After some time, a laundry nearby complained that the soot from the furnace discharge was settling on its clothing. Other neighbors began to complain. It wasn't long before the Jersey City Board of Health gave the order to eliminate the smoke or shut down. Meanwhile, the company was consulting with the Johnson-March Corp., Philadelphia dust control engineers, concerning the smoke problem.

Gas Scrubber — Johnson-March installed the gas scrubber unit, a Type A Hydro Precipitator Scrubber. It's especially designed to remove low and submicron solids from exhaust gases at high and dependable efficiencies.

The model consists of a rectangular shaped housing containing a plenum chamber, a multiple-tube section, two water tanks built underneath the housing, a dewatering filter and an exhaust fan mounted on top of the housing. It is capable of scrubbing gases at better than 20,000 cfm.

The operating cycle begins with the entry of exhaust gases into the plenum chamber (A), as shown in the drawing. The entrained solids are wetted and the air velocities reduced. Spray headers (N1 and N2) atomize water into the chamber, constantly cooling the gas and cleaning the walls and tube deck.

The temperature of the gas entering the scrubber determines the amount of water needed. All excess water and trapped solids follow the normal flow of gas into the water reservoir.

Key Is Turbulence — The gas from the plenum chamber is then compressed at high velocities through precipitator tubes (B) into compartment (C). These tubes extend below the water surface. The gas creates violent turbulence in the water.

As a result, the solids are thoroughly wetted and permanently trapped. They agglomerate and finally settle to the bottom of the tank.

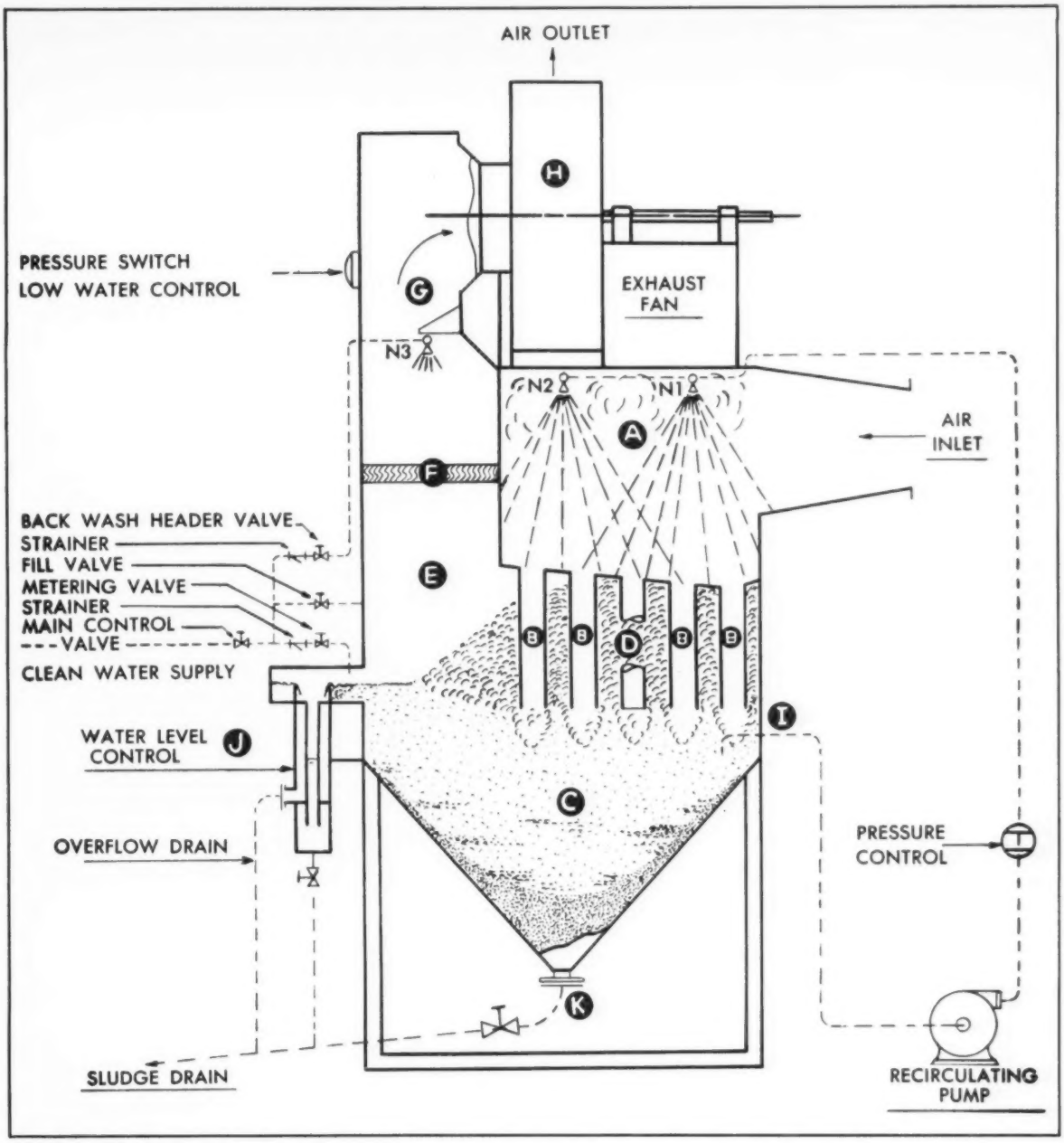
This vigorous scrubbing action rises above the normal water level of the reservoir into the tube chamber (D) where separation of the gas and water takes place.

Velocities reduce in compartment (E) to permit final separation of the air and water by gravity. The water returns to reservoir (C).

The filters (E) remove the remaining moisture from the rising gases in chamber (G). The fan (H) exhausts the cleaned gases into the atmosphere.

Double Use of Water—Although the unit is engineered to recirculate water, the same water that cools the furnace transformer is used and then drained by gravity through the drain valve (K). Temperature of the water is about 85°F.

In addition, the bottom valves are opened slightly on both twin settling chambers to drain the sediment. This sediment is discharged at a rate of 2 gpm. Reclamation of useful materials, although possible, is not done here.



SCRUBBING PROCESS: Maintenance on this hydro-scrubber is easy since it has no moving parts.

An overflow weir in the water level control (J) automatically maintains proper water level. A needle valve controls the small quantities of water needed to keep the correct level. A sight port in the water level control shows the water level and rate of overflow.

A water-tight inspection window in the tube chamber at the water level permits observation of the scrubber operation.

Spray headers (N3) are operated manually to backwash the filters (F).

Hood Draws Smoke—The firm constructed a swinging hood to capture smoke from the furnace. An overhead fan sucks the smoke into this enclosure and out of the foundry.

To keep escaping smoke as high as possible, and less nuisance when it does occur, we have installed a 30 in.-diam steel stack 100 ft high.

Inspectors checked emission from the stack against a Ringelman Chart and found that performance of the unit was 50 pct better than the allowable limit.

Can Overload—The unregulated feeding of oil-soaked scrap does cause small puffs of dark smoke for a few minutes. As soon as the oil is burned however, the smoke stops.

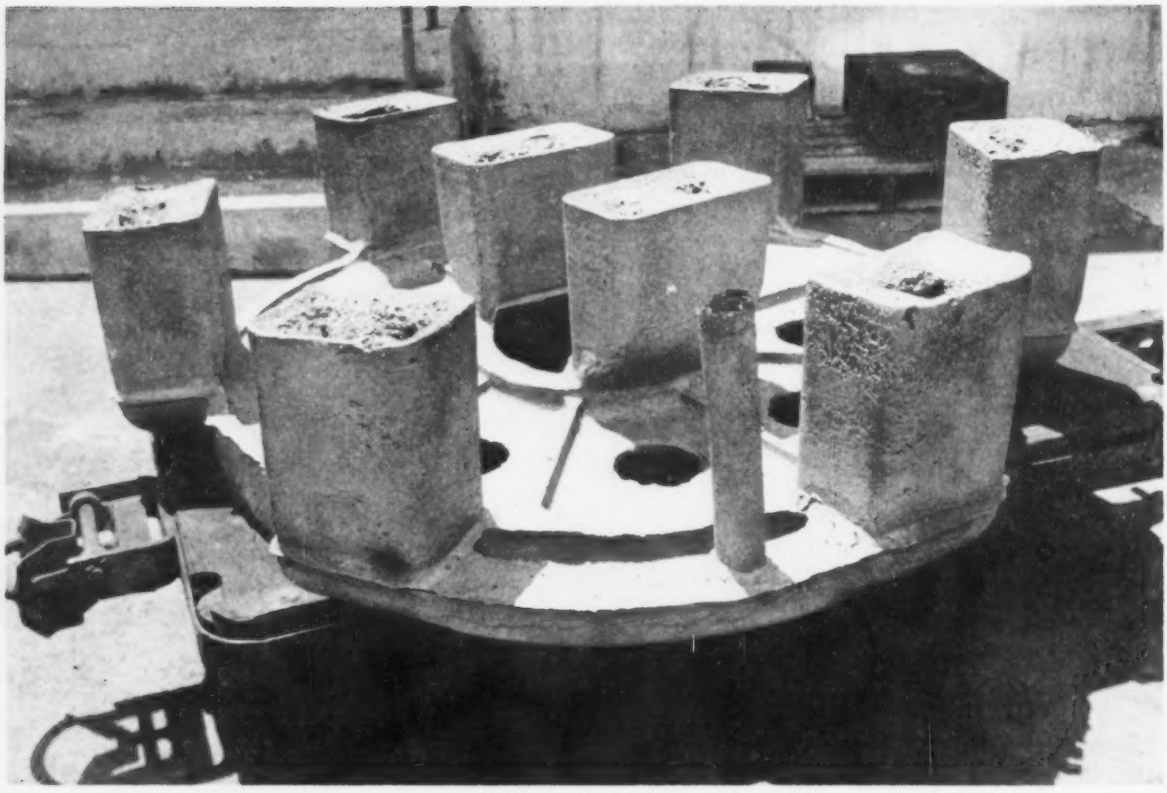


FIG. 1: Sheave casting used in the tests weighed 2440 lb in as-cast condition with six heads on the rim and two on the hub. It was selected as a job likely to result in scabbing.

Mold Treatment: The Key To

By **Hubert Chappie**—Foundry Superintendent, The National Supply Co., Pittsburgh

A good sand formula is basic to good castings.

But what you do to the mold after it's made and prior to pouring can be just as vital.

Drying is one of the more important aspects, and how soon the pour is made after a mold is closed can make a big difference in defects.

■ Every foundryman knows that the mold sand formula is an important factor in producing quality castings. Of equal importance is the treatment given the mold until the casting is poured. Better results can be obtained by using a poor sand formula and having all the procedures such as drying, closing and pouring done correctly, than by using a good sand formula and abusing the mold by indifferent preparation.

When pouring large castings, for instance, the size of the gate is of utmost importance. It must be able to take the metal from the down gate, which is made according to the nozzle size, when pouring. The faster a mold is poured the less eroding action will take place, and the cope will not have to resist the long period of heat before it is covered. Slow pouring causes scabbing erosion and drops.

The subject of nailing areas in drags and copes is a controversial one. There is no doubt that molds can be made without the aid of nails. In making large castings, however, the long molding time required exposes the sand to the atmosphere, and the sand isn't as immune from defects. Nailing provides greater flexibility and insures fewer sand defects in large castings.

Need For Nails Varies—Nailing of gates, fillet areas, and also the area nearest the gate must be evaluated by the individual foundry. In producing small squeezer castings there would be no reason to use large-head roofing nails to pre-

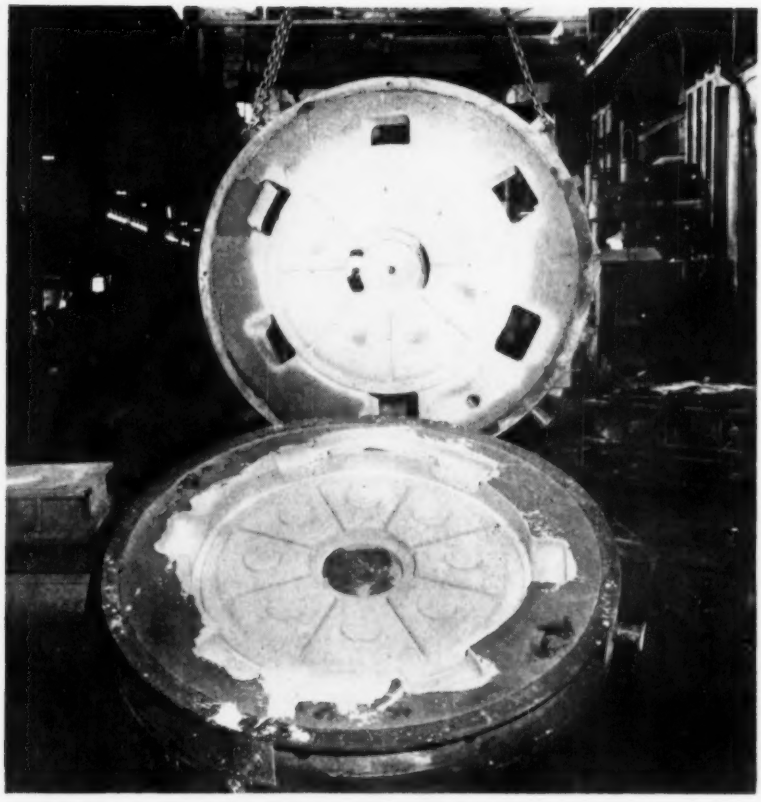


FIG. 2: Mold for sheave casting was tilted 3° for pouring with the gate side down to minimize flowing metal's damage to the cope.

Quality Castings

vent the sand from eroding or scabbing. Also, in pouring small molds, pouring time is so short that mold surfaces are not subject to the force and intense heat of heavy castings.

Wash should be applied at the Baume best suited for your mold practices. Our molds are sprayed, using a 40 Baume. We have chosen this strength because we believe it penetrates the surface better than a higher Baume. The higher the Baume the thicker the wash, and thicker wash often flakes off while pouring.

Our practice is to have a barrel of wash in the core room and one in the molding department. A mixer attached to the side of each barrel usually runs all day. The sand mill operators mix the wash to the right Baume. Twice during the day the sand tester checks the wash for Baume. If it is out of range he informs the muller operator, who makes the correction.

The sand tester makes a written report daily of his Baume findings to the Foundry Superintendent's office. All the molders spray their own molds. Supervision checks the application of wash periodically, as it is possible the molder can let too much wash drip into pockets or neglect certain areas.

Prime Troublemaker—Moisture causes more trouble and is responsible for more defects and changes in the property of sand than any other factor. Most foundries run their moisture in green sand work between 2½ and 4 pct. In dry sand the usual range is 4 to 5 pct. This varies somewhat with type of sand and ingredients used.

Underdrying of molds produces a great deal of the trouble and defects in castings. There is no substitute for a well-dried mold or core. The texture of the sand used or the amount of silica flour present determine the drying time required.

An occasional core should be broken to ascertain the thoroughness of drying, or the mold should be explored at a place where a cavity can be made to find the depth of drying. But in the final analysis, a mold is dry enough when the casting that results is sufficiently clean and of good detail.

Final Check — After the molds have been dried, the close-up men put in cores and then close, clamp, and make ready for pouring. This duty is assigned to two first class molders, who also see that vents from the cores are sealed to keep out metal. These men are important: they can catch mistakes made by the molder, and are responsible for holding the correct thickness of the metal sections.

When cores are fitted into coreprints, loose sand is often deposited in the mold; this must be removed before pouring to insure clean castings.

It is important to have good flask equipment with hardened bushings and pins to insure accurate castings free from shift. Before closing larger molds, some foundries use a sealer between the joints; this is usually made of flour and oil. Sometimes, dry silica flour is used.

Watch Pouring Procedure—The pouring cup must be of good sand and dried thoroughly to keep flowing metal from eroding the cup. Cups should be examined occasionally after pouring to see if they have become eroded. If so, a correction in sand or drying may be in order. Faulty pouring can ruin the casting even after all precautions have been taken for making a good mold, and all the operations are carefully controlled up to the time of pouring.

We believe large castings should

Table 1 **Defects Per Segments**

	— DRAG —									— COPE —								
	1	2	3	4	5	6	7	8		1	2	3	4	5	6	7	8	TOT.
1							24					6		6				36
2		2		10			4				8			10		3		37
3								3										3
4		7			4	20	26			3	1	5			10	10	11	97
5			3					1		2	4		4					14
6	4	10	3	6		1		18			1	1		3				47
7	6		2					10			2							20
8		6						6			3	2		3		3	12	35
9		15	6	1						3		5	1	3	8	2	7	51
10	8	4					1	44		8	16	11	11					103
11	4	4								4			1		2		14	31
12	2	3		1		2					5	1	5			1	6	26
13							4				1	3					8	16
14	1	12					4	20		6	9	14	8		2		2	78
15		14					3	10		6	12	10	2			2	5	64
16		9								4	2	4	4			2	4	29
17		1															1	2
	25	87	14	18	4	23	66	112		36	64	62	36	25	22	23	70	
		TOTAL DRAG – 349 SQ"									TOTAL COPE – 338 SQ"							
							TOTAL – 687 SQ"											
		DEFECTS – SCABS DROP & SANDY									SCABS 98% OF TOTAL							

be poured as cold as possible, and also that pouring should be done at a very fast rate. "As cold as possible" means the temperature which can be poured without wrinkles or waves. In some cases, wrinkles wouldn't harm the casting, especially if the surface is machined. Neither would a surface which isn't machined be harmed; it just wouldn't have the eye appeal.

Temperature Is Critical—Large castings are poured at 2800°F at the furnace. Temperature is checked with an immersion couple. Experience has shown that a 2800°F tapping temperature provides a pouring temperature of 2750°F. When pouring 0.20 to 0.25 carbon steel it is usually only 90°F above the freezing temperature of steel. In making large castings the pouring temperature is extremely important to getting fewer cracks and less penetration.

Heats weighing 60,000 to 80,000 lb are poured with two 3-in. nozzles. A 40,000-lb casting can be poured in 1 minute 25 seconds, or 4 to 5 seconds per ton of steel. Generally, two gates are used. At times, however, one nozzle is opened first, and when there is a pool of metal in the mold the second nozzle is opened into a head. When metal rises into the heads, pouring through the gate is stopped.

As a means of checking quality, setting up a guide for improved practices and settling differences of opinion regarding mold drying time in relation to cleanest castings, a test run was set up to obtain performance data.

The opinion was shared that castings would have better surfaces if, after being made, the molds would set overnight to air dry before oven drying. It was decided to select a job that would be most apt to scab for this test, a sheave job having a flat cope.

Pour Uphill—The sheave was 52 in. OD, made of 0.40 carbon steel, clean weight 1220 lb. With six heads on the rim and two on the hub, the casting shown in Fig. 1 weighed 2440 lb. The gate was between two heads. The mold was tipped 3°, as shown in Fig. 2, with the gate down. Usually molds with flat copes are tipped about 8° to 10°. But we didn't want to increase the height of the head, so 3° was chosen.

This method of pouring uphill has a decided advantage. When a mold is poured flat, the metal immediately flows over the entire drag. This heat spreading over the entire mold causes spalling on the cope. Metal entering a tipped mold doesn't cover the entire drag at once and so is less damaging to the cope surface.

Time Record Was Kept—Seventeen sheaves made in one month were numbered consecutively 1 to 17. A regular time record was kept of each operation after molding. First, the mold hardness of each drag and cope was recorded. Then a record was kept of the time needed to dry both the drag and the cope. Then the time the mold remained on the floor before closing and the time it was closed before pouring were recorded. None of the sheave molds were closed more than 1 hour and 20 minutes before pouring. Pouring temperature of each heat was recorded.

Although humidity and temperature were recorded both in the daytime and at midnight, they were so uniform during the time of the project that they had no effect on the castings. After a casting was poured, it was shotblasted with heads and gate attached. Each segment was evaluated by the same person for the entire drag and cope.

It's of great value to the foundryman to analyze castings and their defects with gate and heads attached. This is the only way that the nature of the defects can be ascertained. Usually it is a breakdown of the gate which is visible when gate is attached. Table 1 shows the area of defects in square

inches in each segment of drag and cope of the castings.

Table 2 lists the time intervals between making the mold and pouring. The hardness of each mold was recorded. Several hardnesses taken on the drag and cope were averaged out. The pouring temperature asked for at the furnace was recorded.

Measure Defects—In Table 3 the top row lists castings having the least defects in square inches. The second row indicates the amount of welding needed on each casting, beginning with the least and ending with the maximum. The third row of numbers indicates the least air dry time before fire was applied to the mold.

Table 4 lists the total defects of each segment. Segments 2 and 8, which are closest to the gate, have the greatest area of defects. This is a natural condition, as the metal passes over this area the entire time of pouring. The numbers which have the least defects are furthest from the gate where the metal is coldest. The tables indicate that molds dried soon after molding have more defects.

Of the 17 molds observed, the 8 dried under 10 hours, with the exception of number 15, followed a pattern and produced the best castings.

Pour Soon After Closing—From these results it can be concluded that all molds dried after 10 to 70 hours do not follow any pattern. This would indicate that molds dried after 10 hours or more show no difference in quality. However, it is clear that those dried for this period cannot be compared with the early drying in producing quality castings.

The molds, upon being closed, did not stand for more than 1.33 hours before pouring. This is considered a most favorable time limit, as experience has shown that molds closed more than 2 hours will produce poorer castings. A similar project was run on 30 sheaves a year later with the same convincing results.

Table 2 **Time Record Of Drying Molds**

CSTGS.	DRAG	COPE	FLOOR	CLOSED	HDNESS	TEMP.
1	7.50 HRS.	5.85 HRS.	.90 HRS.	.42 HRS.	80	2850°
2	27.50	24.5	9.33	.25	85	2850°
3	4.50	3.25	9.33	.25	80	2900°
4	29.50	23.90	6.25	.67	80	2900°
5	8.50	6.25	6.25	.67	85	2840°
6	10.00	8.33	14.0	1.00	80	2840°
7	4.50	2.50	14.15	.83	80	2890°
8	70.00	67.50	5.5	.25	80	2890°
9	64.25	62.50	6.0	.25	85	2890°
10	22.50	21.00	7.0	.50	85	2900°
11	6.00	3.50	13.0	.50	85	2900°
12	22.50	21.00	9.0	1.33	80	2900°
13	6.00	3.50	9.0	1.33	85	2910°
14	10.5	9.00	9.0	.50	85	2920°
15	5.5	4.5	9.0	.50	85	2880°
16	10.5	9.0	12.25	.75	85	2880°
17	5.0	4.0	12.50	.50	80	2910°
NO'S. 1, 2 & 3 DRIED IN OVEN AT 400° — 14 HRS.						
BALANCE DRIED WITH COLEMAN AT 500° — 4 HRS.						

Table 3 **Order Of Defects**

17	3	5	13	7	12	16	11	8	1	2	6	9	15	14	4	10
17	3	5	11	1	13	6	2	7	15	8	14	9	16	12	4	10
3	7	17	15	11	13	1	5	6	14	16	12	10	2	4	9	8

1st Row: Least Defects

2nd Row: Least Welding

3rd Row: Least Air Dry

Table 4 **Defects In Cope And Drag Combined**

Segment	Defects sq. in.
1	61
2	151
3	76
4	54
5	29
6	45
7	89
8	182
Total	687

Segments 2 and 8 are closest to the gate

Lead in Cast Steel: How Much Does Machinability Improve?

By **W. J. Phillips**—
Vice President and General Manager,
and **D. B. Barron**—Works Manager,
Crawford Steel Foundry Co., Bucyrus, O.

It's surprising what a little lead will do.

Given a sand-free surface and uniform heat treatment of castings in which the lead is evenly distributed, you can machine at higher hardness, faster speeds, and still get longer tool life.

Actual production runs comparing leaded and non-leaded steel castings show what to expect.

▪ The addition of small amounts of lead to liquid steel is gaining wide acceptance as a way to use higher strength steels without sacrificing machining economy. Most of the work to date has been concerned with leaded wrought steels, somewhat eclipsing the fact that lead additions will increase the machinability of steel castings as well.

Development work with leaded cast steels began over two years ago at Crawford Steel Foundry. Production runs of steel castings containing from 0.12 to 0.20 pct lead have been made for more than a year.

The leaded steel is produced under a licensing agreement with Inland Steel Co., which holds the basic patents.

Inland's metallurgists have concentrated the bulk of their effort in the direction of methods for adding lead to wrought steels. But since there are a number of fundamental differences betwen the two processes, the same techniques can't be applied to cast metal.

Consequently, Crawford engineers devised a special procedure of their own which evenly distributes lead throughout the melt. How well it works is borne out by results obtained both in the laboratory and in actual production.

Machining tests on leaded steel castings produced by Crawford have shown impressive reductions in machining time and tool wear, along with a considerable improvement in surface finish. These benefits are obtained without sacrificing tensile or impact properties. Leaded cast steels now being made will meet any of the current physical specifications for carbon and low-alloy steel castings.

Dispersion Is Critical—Optimum results are achieved only when the lead is uniformly dispersed in the metal. A check on lead dispersion is made for every heat produced at Crawford by pouring a cylinder 6 in. in diam and 12 in. high, tapered for proper directional solidification; drillings for lead analysis are taken 1 in. from the top and 1 in. from the bottom. Maximum allowable deviation from the mean of 0.16 pct lead is 0.04 pct.

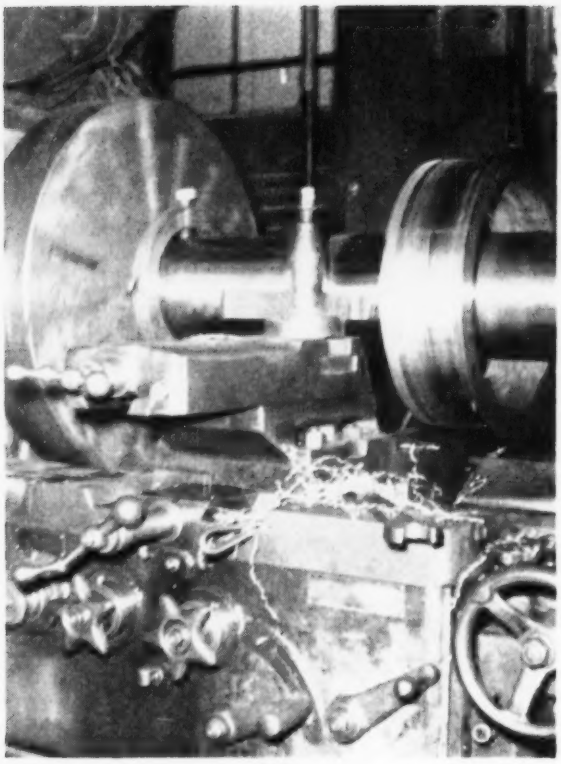
Some results of machining tests on cast steels with and without lead are listed in the accompanying table. Normalized samples were heated for 1 hour at 1650°F and cooled in still air. Quenched and tempered samples were heated for 1 hour at 1600°F, water quenched, tempered at 1000°F for 2 hours and air-cooled.

The machinability ratings given are averages of five tests on each sample. The ratings are based on

Constant Pressure Machinability Ratings for Leaded and Non-Leaded Steel Castings

Sample	Treatment	Bhn	Average Machinability Rating
1 PN	Non-leaded, normalized	163	81
1 LN	Leaded, normalized	165	116
1 PQ	Non-leaded, Q & T	252	87
1 LQ	Leaded, Q & T	252	116

Leaded castings contain 0.18 pct Pb



FASTER MACHINING: Leaded casting is machined 25 pct faster than its non-leaded twin. Tool life is doubled and finish improves.

HAS MANY USES: Parts requiring a lot of machining are where leaded cast steel really excels. These castings are for large cranes.

the performance of a C1018 standard steel arbitrarily assigned a rating of 72. The ⅛ in. deep turning cuts were made on 3.8 in. diam sections, using a peripheral speed of 40 fpm and a tool thrust of 147 lb.

The studies were made by an independent laboratory in order to establish a comparative machinability rating which might be expressed numerically. No attempt was made to check tool life or surface finish.

Confirmed In Production — Perhaps of greater interest to users of steel castings are data compiled from actual production runs.

To determine the feasibility of raising hardness from 197-227 Brinell to 260-290 Bhn, a shovel and crane builder machined 100 non-leaded castings and 100 leaded steel castings of identical design. Their analysis was similar, except that the leaded castings contained 0.18 pct Pb. Hardness of the non-leaded castings ran 210 Bhn, while the leaded material averaged 274 Bhn.

In the first step, a turret-lathe operation, the leaded castings made possible a 25 pct increase in machining speed. Tool life was about double that of the non-leaded castings. The next operation involved drilling. Here, the harder leaded material was drilled at a 20 pct higher rate than non-leaded castings, and tool life was four times as great.

When an external keyway was milled, the leaded castings were processed at a 32 pct higher rate, and cutter life became five times as great.

Improves Finish — Profilometer readings on surface finish after the turret lathe operation showed leaded castings to average 60 microinches finer than non-leaded.

A commercial gear manufacturer ran an economy check on leaded steel castings in which 10 non-leaded gear blanks were compared with 10 blanks made of leaded steel. They were identical in design and analysis, except for 0.20 pct Pb in the leaded material. The castings were quite large, weighing 300 lb. All 20 were water-quenched and tempered to 290-300 Bhn.

The leaded blanks were machined 30 pct faster and tool life was seven times greater than for the non-leaded castings.

Maximum machining economy with leaded steel castings can be realized only when the castings are free of surface sand and have been properly heat-treated to eliminate hard spots.

Reprints of this article are available as long as the supply lasts. You may obtain a copy from Reader Service Dept. THE IRON AGE, Chestnut & 56th Sts., Philadelphia 39, Pa.

Soldering: Automation Breeds

By **H. J. McGarvey**—Manager of Application Engineering and **G. P. McKnight**—Development Engineer, Speer Resistor Div., Speer Carbon Co., Bradford, Pa.

Automation has its benefits in soldering electronic parts, but it also creates new problems.

Parts which took 3 seconds to solder by hand now take as long as 30 seconds by batch dipping.

Corrective measures can be taken to avoid damage to sensitive parts by overheating.

▪ Replacing an old process with a new one invariably leads to new problems—problems that are more than just the usual "bugs." Makers of small electrical parts and electronic assemblies found this out when they switched from hand soldering to automatic soldering.

One of the big problems at present is the characteristic changes which take place when an electronic part or assembly is exposed to soldering temperature for a long time. This isn't likely to happen with hand soldering, but it can and does happen under the extreme conditions used for soldering in an automated setup. In some cases, the changes can be so severe as to shift the characteristics of the part beyond their specified limit.

How Problems Arise — Printed circuits serve as an example of what's apt to take place. In shifting from hand soldering, which involves a second or two, the dip period in an automatic setup may extend to 30 seconds with the solder at a temperature of 450° to 650°F. In that time, as many as 200 or 300 parts can be completed, but the temperature effect is considerably greater.

The short wire leads usually used on printed circuits transmit heat quickly. This becomes very noticeable on small parts having a small thermal lag. Yet, it's just such small units which are usually made to operate at a maximum temperature of 185° to 302°F. The factors involved can lead to changes in the characteristics of coils, resistors, capacitors and like units.

Detection Not Easy—Particularly troublesome are those parts which use wax, varnish or lacquer. Over-exposure of such parts during dip soldering melts the wax or burns the lacquer, damaging the units in such a way that isn't always apparent by visual inspection. And in some cases, the printed board itself may warp from over-exposure to heat.

Visible damage is costly, but steps can be taken to control it. It's the unseen damage which crops up as an epidemic when an assembly is completed. Repair or replacement at this point becomes even more expensive.

Military and RETMA specifications recognize the damage that can occur to a fixed composition resistor that is improperly soldered. Military specification MIL-R-11B calls for immersing the resistor terminals in solder at 650°F to within ⅛ to 3/16 in. of the resistor body, one at a time, for 3 seconds ±½ seconds. After they're tested, resistance is to be measured again 24 hours later, ±4 hours. Resistance must remain at less than a 3-pct change and the resistor itself cannot be damaged mechanically.

Develop New Curves—MIL and RETMA specifications give limits of change in resistance with time and temperature at only one point on a curve. So that factory engineers of assembly makers could set up production soldering practices without running into possible damage to fixed composition resistors, Speer Resistor Div., Speer Carbon Co., developed its own set of curves. These are given in Figs. 1 and 2.

In any multiple soldering job, the most sensitive part determines the most severe condition. Therefore, the data in Figs. 1 and 2 are from tests on the most sensitive fixed composition resistors.

Each resistor lead was dipped in molten solder to within ⅛ in. of the body. Time of immersion varied up to 20 seconds; solder temperature varied from 450° to 650°F. The resulting changes were then plotted.

Time vs. Temperature — The values in Fig. 1 are those for 1- and 2-pct changes in resistance produced by the various combinations of solder temperature and immersion time. These values were derived from the data in Fig. 2. Speer considers a resistance change of less than 1 pct satisfactory; 2 pct is near the maximum permissible. Thus, the 2-pct curve represents the maximum dip time which varies from 3 seconds at 650°F to 21 seconds at 475°F.

So it's apparent that resistors which are satisfactory when made under the MIL specification (3 seconds at 650°F) may not be satisfactory when the exposure time to heat is longer, even at lower temperatures. Therefore, to avoid damage to resistors, the time-temperature combination should not exceed that in Fig. 1.

Other Problems—The time-temperature factor isn't the only one that affects the electrical characteristics of a circuit. Overfluxing in circuits which operate at high temperatures can cause current leakage

and malfunctioning. Flux deposits near tubes with high power dissipation are the most frequent offenders.

Flux also attracts dust and dirt which leads to leakage. And in high humidity, it promotes fungus growth.

Many makers of electronic equipment avoid such problems by applying flux where the actual soldering takes place. The reason for this is because use of solvents to remove excess flux only creates extra problems. Solvents such as perchlorethylene, some alcohols and other solvents remove not only the flux, but waxes and similar impregnating materials from the parts. Some solvents damage lacquer-type materials.

If solvents are used too long, they may introduce wax or flux to some types of coils or capacitors, changing their electrical properties or making them inoperable.

Some Useful Tips—In soldering electronic parts, starting with a good solderable surface is essential. This can be done by coating lead wires with solder or tin before placing them in storage. Storing them in a clean area or in closed containers helps. It'll prevent film formation during soldering.

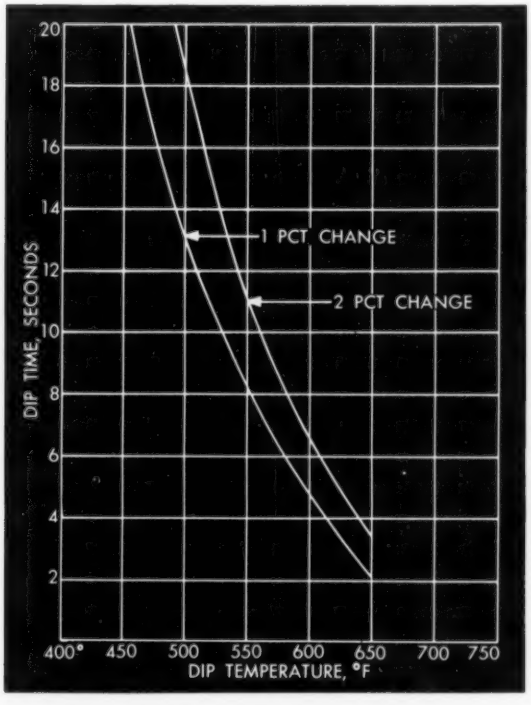
Make certain that the storage area is free from corrosive fumes, and that the air is dry and the temperature stable.

Use the thinnest flux coating that will do a satisfactory job. If fluxing of critical parts is a problem, consider masking.

Keep the solder bath clean and the surface oxide-free. It's good practice to remove dirt and dross before each use.

Proper alloy content of the solder bath is also important. Check it either by observation or chemical analysis. Variations in alloy content can increase the solder's viscosity, raise it's melting temperature and create new problems. However, you can avoid them by taking simple precautions.

Also analyze each job as to materials, complexity and special requirements. Sometimes, only minor design modifications of parts will help to overcome melting, burning and overheating problems. For example, using longer leads or adding heat sinks to draw off excess heat may be all that's required. But in any case, it's possible to reach a balance between the soldering temperature and length of time the piece is immersed.



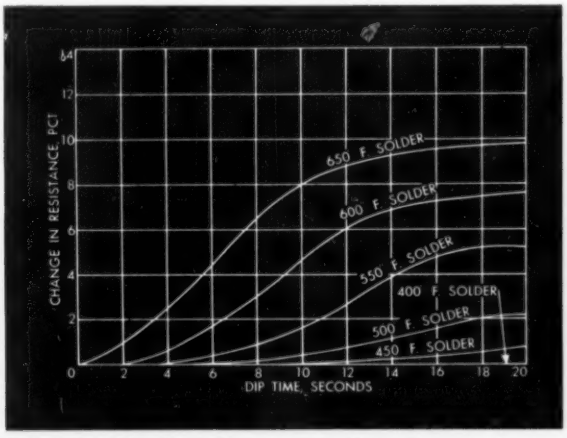


FIG. 1 (left)—How long can you immerse a lead on a sensitive resistor at solder temperatures from 450° to 650°F without damaging the resistor? A 1% resistance change is satisfactory; 2% maximum.

FIG. 2 (above)—Tests on the most sensitive type fixed composition resistors show the change in resistance that's likely to occur when leads are dipped in solder ranging from 400° to 650°F.

High-Speed Drilling Ups Parts Production

Speed in drilling operations needn't mean sacrificing accuracy.

By adopting the right methods, you can make holes quickly to relatively close tolerances.

One way is to finish drill bores in one step. This does away with pre and post drilling operations.

▪ High-speed carbide drilling has enabled a large tractor firm to speed its output. By finish-drilling several holes in a cast iron workpiece in minutes on one machine, it does away with time-consuming post-drilling steps.

The tractor components, hydraulic pump bodies, roll up to the unit and leave a short time later containing six holes. It drills these one at a time at a 12-ipm rate. The 2-in. deep, 0.6230-in. diam bores are made in a solid piece. No preliminary drilling paves the way, nor is there any reaming afterwards.

Finishes Nicely—In use at Ford Motor Company's Highland Park, Mich. tractor plant, the high-speed methods result in holes with an 80-microinch rms surface finish. They are produced to a ±0.0005-in. tolerance.

Performing the operation is a boring-drilling machine equipped with a Starbore drill. This setup has three key features: (1) An indexing mechanism brings the work into the drill rapidly. (2) An efficient system cools and lubricates the tool and work. (3) The drilling tool has a hole, through which coolant passes.

The machine itself is a product of Ex-Cell-O Corp., Detroit. Star Cutter Co., Farmington, Mich. makes the tool.

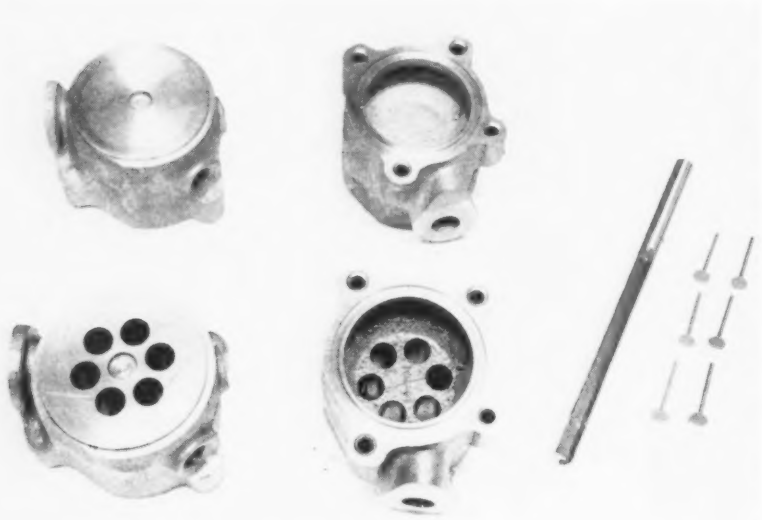
How It Works—First, a set-up man manually chucks the part in an indexing fixture. Pushing a button starts everything off. The fixture moves forward quickly; it feeds the workpiece into the drill at the 12-ipm rate. At the drilling operation's end, the fixture retracts. Work then indexes to the next drilling location. When the sixth hole is completed, the unit stops.

As the tool performs its trepanning action, it creates ⅛-in. diam pins. These by-products are flushed out at the rear of the fixture as they are made. The coolant flow carries them into a coolant tank at the rear of a pressure unit.

The drill has a molded carbide tip which is brazed to a tubular shank with two rutting flutes. A hole in the carbide tip, slightly off center, accomplishes the trepanning cutting action of the tool. Coolant flows through this off-center hole.

Coolant Helps—A highlight of the operation is its high pressure coolant system. This feeds coolant at 400-psi through the drill. It not only cools and lubricates the tool and work, but also carries off the ⅛-in. diam pins. An auxiliary low-pressure coolant line also helps. It keeps a special well full; this well surrounds a bushing in front of the work. This bushing guides the drill.

Tool life for the drill is approximately 670 pieces per grind. This is the equivalent of 1340 inches per sharpening. The finish-drilled parts are produced at a net rate of 25 pieces per hour at 80-pct efficiency.



BEFORE AND AFTER: Holes in this cast iron piece are drilled by the tool at right. Pins next to tool are by-products.

1957 FORD FAIRLANE 500 SUNLINER

PHOTO: COURTESY FORD MOTOR COMPANY

DSC *RBF* STRIP Scoring 100% Job-Performance on '57 Ford Radiator Grilles, Repeating '56 Record

THE FACTS OF THE CASE—Continuing its '56 record, DSC *RBF* STRIP is giving two Ford vendors 100% job-performance in their production of '57 Ford front-end grilles . . . meeting all requirements for drawing quality and finish.

For the '57 grille the "specs" call for slit-edge coils, over 12" in width, .036" thick, No. 4 temper, DSC *RBF* bright finish suitable for chrome plating. As each blank weighs over five pounds, the requirements run to millions of pounds.

AS A MANUFACTURING MAN—We believe you would appreciate the workmanship and appearance of these grilles . . . how each half section, right and left, is drawn in one "shot" to make the frame, the lattice-work grid (of continuous-channel design), and the recesses for the turn signals. The sections are then chrome plated and assembled.

Simple? Yes . . . when the gauge is tight, the temper right and the finish "deep-rolled" bright for mass-production plating . . . PLUS the die-making and production skills of the Ford vendors.*

AS A VALUE-WISE BUYER—Wouldn't you say that a case history like this one shows (1) that DSC *RBF* STRIP is *profitable* to the users; (2) that it keeps their over-all job-costs *competitive;* (3) that DSC SERVICE helps two major vendors meet Ford standards for product quality and for closely-timed production and shipping schedules?

There may be profit possibilities in your own use of DSC RBF "deep-rolled" STRIP . . . or other DSC PRODUCTS and SERVICES. For complete information check with your nearest DSC Customer "Rep." You'll get immediate action on your inquiry.

**DSC General Office will supply the names if requested on your company letterhead*

Customer Satisfaction Is Our Business

DETROIT STEEL CORPORATION

GENERAL SALES OFFICE, DETROIT 9, MICHIGAN

CUSTOMER "REP" OFFICES:

Charlotte, N. C., Chicago, Cincinnati, Cleveland, Columbus, Ohio, Dayton, Ohio, Detroit, Grand Rapids, Mich., Hamden (New Haven), Conn., Indianapolis, Jackson, Mich., Louisville, Ky., Milwaukee, Wis., New York, St. Louis, Toledo, Worcester, Mass.

DSC MILLS AND PRODUCTS

PORTSMOUTH DIVISION, PORTSMOUTH, O.

Coke • Coal Chemicals • Pig Iron
Basic OH Steel Ingots • Blooms • Slabs • Billets • Rods
Hot Rolled and Cold Rolled Sheets • Low and Medium Carbon
Manufacturers' Wire • High Carbon Specialty Wire • Aluminum Cable Steel Reinforcement • Rope Wire • Tire Bead Wire • Welded Wire Fabric

MILL DIVISION: DETROIT, MICH., HAMDEN, CONN.

Cold Rolled Carbon Steel Strip
Flat Cold Rolled Carbon Spring Steel

STEEL CENTENNIAL 1857 1957

DETROIT DSC STEEL

COPYRIGHT 1957

. . . PUT UP THE WIND SHIELD, NELLIE

When the going got dusty back in 1907, Nellie had to put up the "wind shield" on this early Pope-Toledo. Mamma was too busy with spark, throttle, mixture, lubricator, cone clutch, progressive shift, bulb horn, two-hand steering and hand-and-foot brakes to do that too. And can you imagine what that gritty, billowing dust did to the EXPOSED *gears*, protected only by some sticky, poor-grade grease? No wonder tolerances were generous — and gear life short!

Into this pioneering atmosphere plunged John Christensen and Soren Sorensen, to start in the gear business. The problems that faced them then were different than those we face today, but we still adhere religiously to their formula for meeting them — do the best job possible every time, and be sure it's done a little better than anyone did it before. We think that's the main reason we've built up such a satisfied list of steady customers over the past 50 years. We'd like to add *you* to this list too — why not give us an opportunity on your next custom gear order?

THE CINCINNATI GEAR CO.
CINCINNATI 27, OHIO
Fifty Years of "Gears—Good Gears Only"

CINTI

FREE TECHNICAL LITERATURE

New Catalogues And Bulletins

Money-saving products and services are described in the literature briefed here. For your copy just circle the number on the free postcard, p. 113.

Sheet Feeders

Old metal-sheet feeders can now be brought up to date. A bulletin explains how 16 attachments can give them many advantages of late models. It describes each device. (Dexter Folder Co.)

For free copy circle No. 1 on postcard, p. 113

Surface Grinders

Precision toolroom and production grinders are introduced in a 6-page brochure. It also lists various accessories and attachments. (Rein Brothers Co.)

For free copy circle No. 2 on postcard, p. 113

Tiny Locknuts

Miniature precision locknuts are presented in a brochure. These tiny fasteners come in stainless steel, brass, steel and aluminum. (Standard Pressed Steel Co.)

For free copy circle No. 3 on postcard, p. 113

Quantometers

Optical emission quantometers can help you make better products at lower cost. So points out a company's dozen-page folder. It describes analytical controls which provide chemical analyses of incoming or outgoing materials. These instruments are accurate and fast, doing a job in minutes that might otherwise take hours. (Applied Research Laboratories.)

For free copy circle No. 4 on postcard, p. 113

Spectro Analysis

Spectrochemical analysis methods and equipment are discussed in a 24-page booklet. It covers a variety of prism and grating spectrographs, and related accessories produced in England. (Jarrell-Ash Co.)

For free copy circle No. 5 on postcard, p. 113

Record-Keeping

"In record keeping," states a 16-page product brochure, "it's visibility that counts." It goes on to introduce and explain a filing setup that offers good visibility. (Diebold, Inc.)

For free copy circle No. 6 on postcard, p. 113

Cycling Drive Unit

Electro-magnetic cycling drive units appear in a bulletin. (Cycledynamics, Inc.)

For free copy circle No. 7 on postcard, p. 113

Electroplating

New preparation processes for electroplating are reviewed in a firm's written matter. These processes offer a complete cycle for cleaning and preparing metals to give high adhesion with plated coatings. (Enthone, Inc.)

For free copy circle No. 8 on postcard, p. 113

Fabricated Alloys

Fabricated alloy products are described in a 32-page booklet. It

illustrates many examples of items and services available from one company. Shown are numerous fabricated welded alloy items that are heat and corrosion resistant. (Rolock, Inc.)

For free copy circle No. 9 on postcard, p. 113

Sheet Nibbler

You can nibble through 10-gage stainless with a handy little tool outlined in a data sheet. The lightweight nibbler easily bites through similar thicknesses of nickeled, CR steel and galvanized iron. It'll work on ac or dc, 115-v up to 60 cycle. (Fenway Machine Co.)

For free copy circle No. 10 on postcard, p. 113

Barrel Finishing

Precision barrel finishing equipment is briefly reviewed in a folder. It contains data on modern-designed tumblers with electronic controls. These units deburr, micro-finish, speed polish, grind, hone, color or burnish. (Speed-D-Burr Corp.)

For free copy circle No. 11 on postcard, p. 113

Welding Guide

Hints on how you might improve your welding operations appear in a 40-page booklet. It includes many tips on welding with both electrodes and gas rods. (Marquette Mfg. Co.)

For free copy circle No. 12 on postcard, p. 113

Abrasive Wheels

Abrasive mounted wheels are covered in a catalog. (Simonds Abrasive Co.)

For free copy circle No. 13 on postcard, p. 113

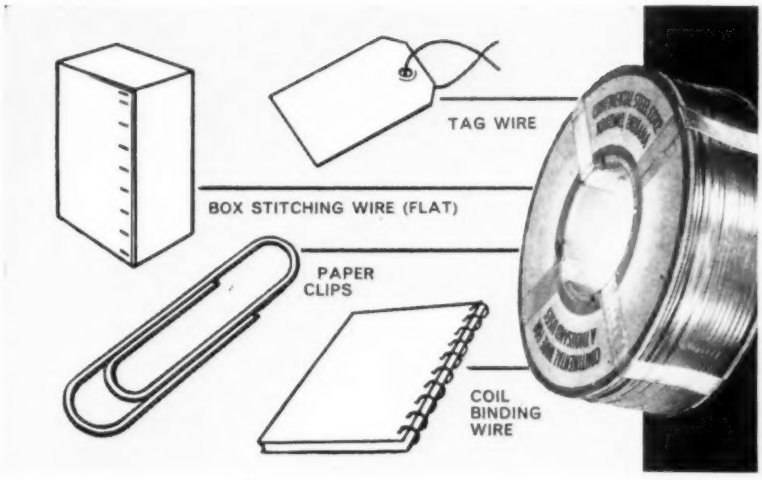
Dial Indicators

A data sheet describes dial indicators. These feature extreme accuracy. (Petz-Emery, Inc.)

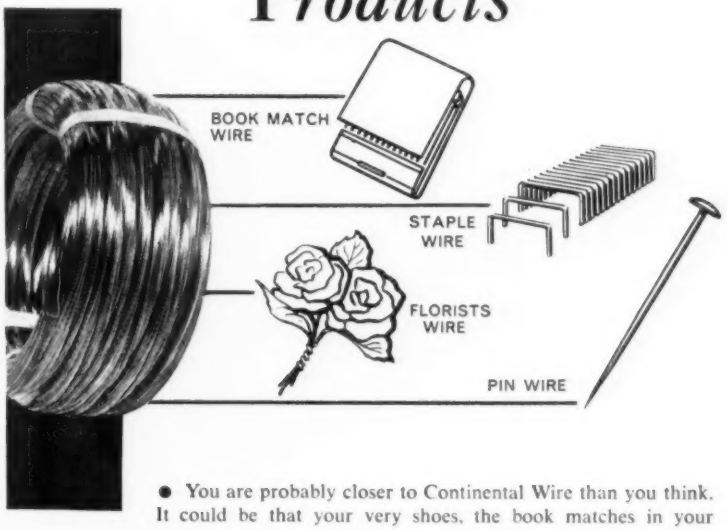
For free copy circle No. 14 on postcard, p. 113

Overhead Cranes

Heavy double grinder overhead cranes have come a long way. A folder points out that cranes deliver top efficiency when they're engineered to fit today's needs and



Fine and Specialty Wire for Super Fine Products



● You are probably closer to Continental Wire than you think. It could be that your very shoes, the book matches in your pocket or the paper clips in your desk—were made using dependable Continental Fine Wire! That's because Continental is preferred by hundreds of leading firms for literally thousands of different fine wire applications. For super fine products—you, too, should try Continental Fine and Specialty Wire, available in many sizes, of almost any temper, finish or analysis, in low carbon and medium low carbon steels.

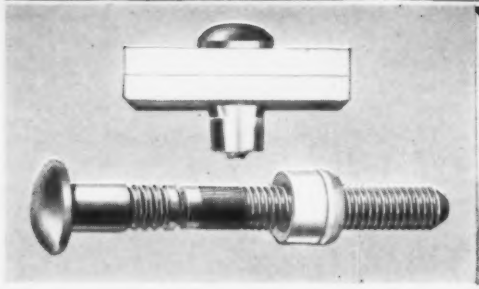
For the finest in fine wire—call in Continental!

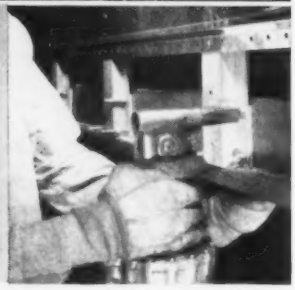
CONTINENTAL

STEEL CORPORATION • KOKOMO, INDIANA

Wire Specialists for over half a Century

PRODUCERS OF: Manufacturers' Wire in many sizes, tempers, and finishes, including Galvanized, KOKOTE, Flame-Sealed, Coppered, Tinned, Annealed, Liquor Finished, Bright, and special shaped wire. Also Welded Wire Reinforcing Fabric, Nails, Continental Chain Link Fence, and other products.





Townsend Lockbolts Provide Strong, Vibration-Proof Joints For Rugged Fruehauf Volume ★ Vans

Rugged, high-payload Volume ★ Vans are built using Townsend lockbolts† at critical points to provide the utmost strength. "Fruehauf uses lockbolts because they result in a uniform, high-strength, vibration-proof joint without need of skilled operators," says George Chieger, Executive Engineer.

Townsend lockbolts are easy to apply. The gun engages the pull grooves of the lockbolt. As the trigger is depressed, the work is drawn together with a high clinching action and the collar is swaged into the locking grooves of the pin, forming a permanent lock. The lockbolt pintail then is broken off at the breakneck groove, and ejected from the gun automatically. The entire operation is fast, and requires no special training or skill.

Lockbolts also have advantages in service work, says H. J. Biers, Fruehauf General Service Manager, "When field repairs are required that necessitate removal of lockbolts, they always are replaced with comparable lockbolts. If a better fastener were available, Fruehauf would use it."

For a complete explanation of how Townsend lockbolts can help you to obtain stronger, longer-lasting joints, allow us to send one of our representatives. He can give you a complete demonstration right at your desk. Townsend Company, P. O. Box 237-B, New Brighton, Pa.

†Licensed under Huck patents RE 22,792; 2,114,493; 2,527,307; 2,531,048; 2,531,049 and 2,754,703

THE FASTENING AUTHORITY

Townsend

COMPANY • ESTABLISHED 1816

NEW BRIGHTON, PENNSYLVANIA

Sales Offices in Principal Cities

Cherry Rivet Division • Santa Ana, California

operating conditions. Such overhead units are described. (Industrial Crane & Hoist, Ingersoll Products Div., Borg-Warner Corp.)

For free copy circle No. 15 on postcard, p. 113

Grind-Mill Controls

Covered in a data sheet is a new control system for closed circuit grinding. It says the arrangement substantially increases production from grinding mills by accurately and automatically controlling the mill load at an optimum operating point. (Leeds & Northrup Co.)

For free copy circle No. 16 on postcard, p. 113

Dry Gas?

A brochure describes molecular sieves as drying agents for gases. Tables and charts provide engineering data for preliminary designs of low-dewpoint drying systems. The sieves are adsorptive desiccants for gas-drying. (Linde Co.)

For free copy circle No. 17 on postcard, p. 113

Handling Trucks

Combine the right truck with the right attachment and you've got a winning team. So states a 12-page guide on industrial lift trucks. It illustrates how the attachments mount and gives details on many materials handlers. (Hyster Co.)

For free copy circle No. 18 on postcard, p. 113

Self Lubrication

ABC's of modern lubrication are explained in a folder. Its four pages cover basic elements of automatic lube setups. A key item in the publication is an offer to develop complete designs for built-in central lubrication systems, without charge to machinery builders. (Bijur Lubricating Corp.)

For free copy circle No. 19 on postcard, p. 113

Induction Furnaces

Recent design advances in water-cooled leads for induction furnaces are briefed in a bulletin. It points up benefits of these innovations. (Inductotherm Corp.)

For free copy circle No. 20 on postcard, p. 113

FLEXIBLE DESIGN

CUTTING ACCURACY

CONTINUOUS FEED

RUGGED CONSTRUCTION

Automatic Shears

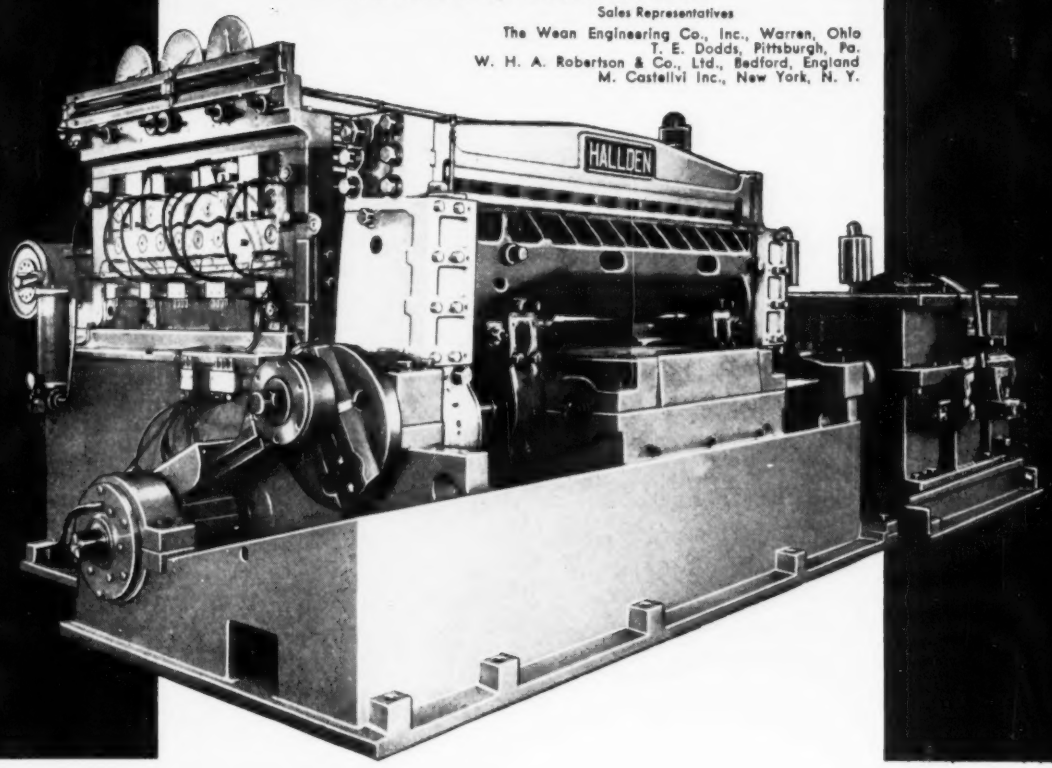
BY

HALLDEN

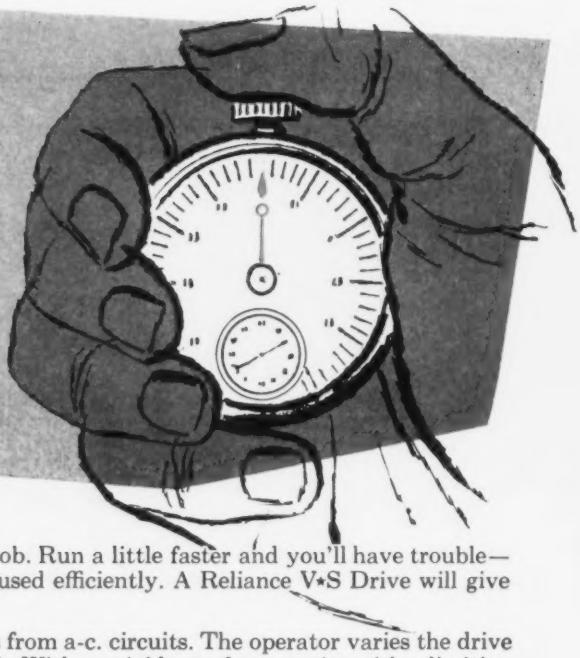
THE SHEARING SPECIALISTS

THE HALLDEN MACHINE COMPANY
THOMASTON, CONNECTICUT

Sales Representatives
The Wean Engineering Co., Inc., Warren, Ohio
T. E. Dodds, Pittsburgh, Pa.
W. H. A. Robertson & Co., Ltd., Bedford, England
M. Castellvi Inc., New York, N. Y.



how do you measure your production?



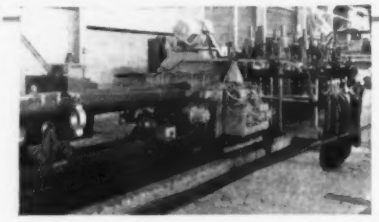
There is a *just-right* production speed for every job. Run a little faster and you'll have trouble—a little slower and your equipment is not being used efficiently. A Reliance V*S Drive will give you the *just-right* speed for each job.

Reliance V*S is an all-electric drive that operates from a-c. circuits. The operator varies the drive motor rpm. to set up the ideal speed for every job. With no rigid set of gear ratios with a limiting number of speeds, he has an infinite selection of rpm.'s from a wide flexible band of operating speeds.

There is a V*S Drive designed for your equipment. Write for Bulletin D-2311.

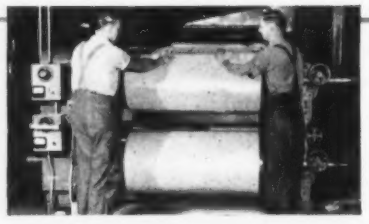
• TONS PER HOUR

In order to maintain a uniform production rate of 80 tons per hour with varying sizes of pipe, this pipe mill must change its line speed from 30 ft. per minute to 80 ft. per minute to compensate for differing gauges of steel. A 500 hp. multi-motor V*S Drive does the job.



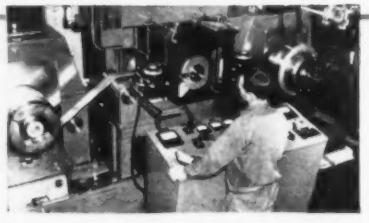
• YARDS PER MINUTE

In order to properly size differing types of cotton cloth, the textile slasher must operate at line speeds varying from 28 yds. per minute to 225 yds. per minute. A 25 hp. V*S Drive does the job.



• REVOLUTIONS PER MINUTE

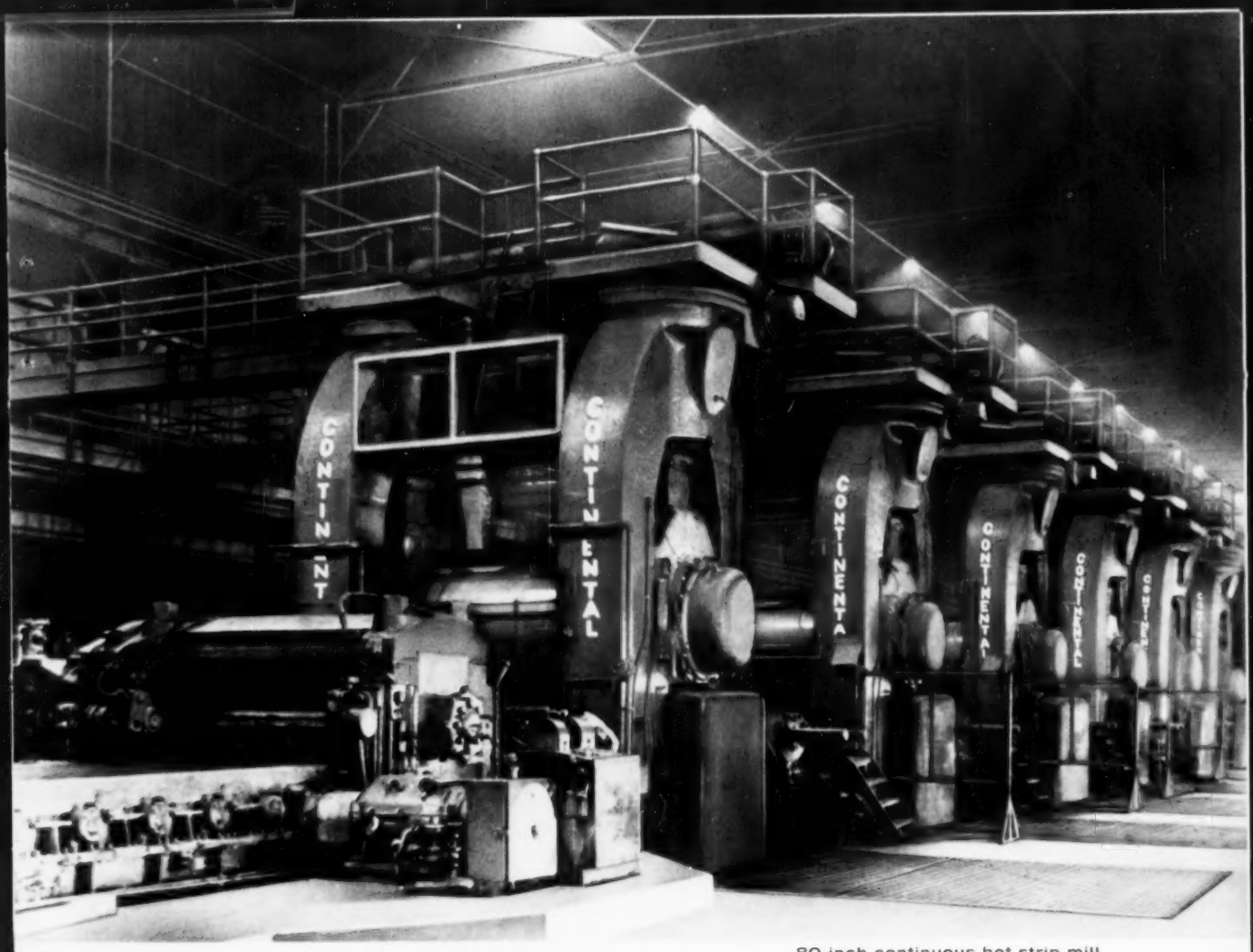
In order to maintain the correct tension on the metal on this highly accurate rolling mill, the speed of the coil winder must decrease from 900 rpm. to 450 rpm. as the diameter of the roll builds up. A 20 hp. V*S Drive does the job, automatically. D-1163



RELIANCE ELECTRIC AND ENGINEERING CO.

DEPT. 28A, CLEVELAND 17, OHIO • CANADIAN DIVISION: WELLAND, ONTARIO

Sales Offices and Distributors in Principal Cities



80-inch continuous hot strip mill

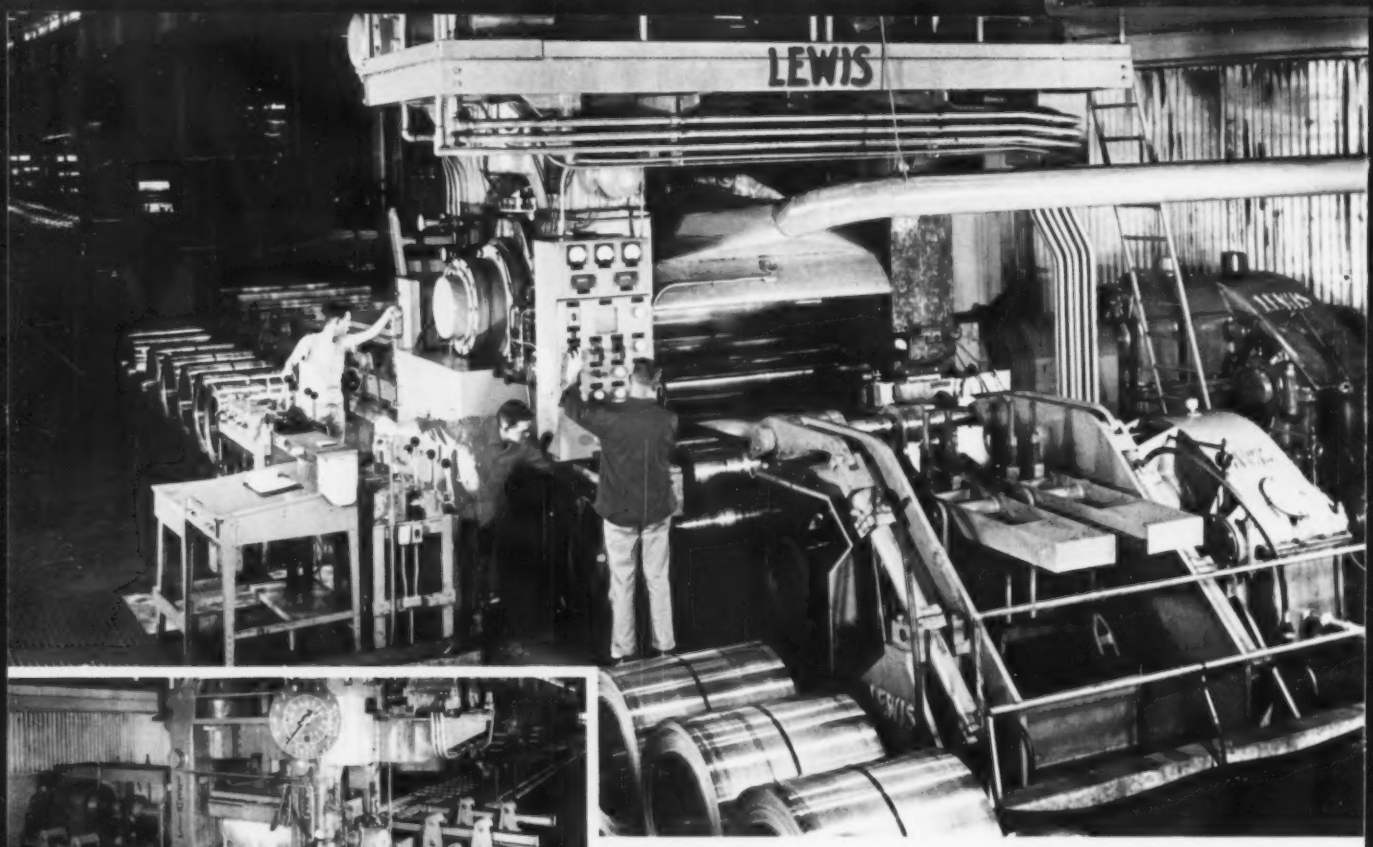
BLAW-KNOX
CONTINUOUS HOT STRIP MILLS

Blaw-Knox designs and builds a full range of continuous, semi-continuous, and single stand reversing hot strip mills. Other Blaw-Knox equipment for the metals industry includes complete rolling mill installations including all auxiliary equipment for ferrous and non-ferrous metals, iron, alloy iron and steel rolls, Medart cold finishing equipment, carbon and alloy steel castings, fabricated steel plate or cast-weld design weldments, steel plant equipment, and heat and corrosion resisting alloy castings.

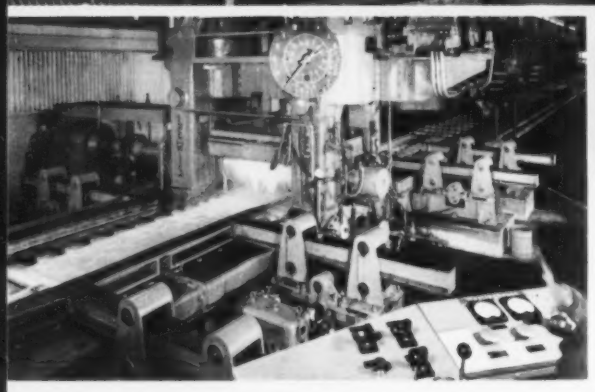
BLAW-KNOX

BLAW-KNOX COMPANY

Foundry and Mill Machinery Division
Blaw-Knox Building · 300 Sixth Avenue
Pittsburgh 22, Pennsylvania



15 and 36 x 69-inch 4 high mill at Aluminum Foils, Inc., Jackson, Tennessee, for reducing aluminum strip to foil thicknesses. Dual coolant system permits use of mill for both hot and cold rolling.



30 x 70-inch 2 high hot reversing mill at Aluminum Foils, Inc., Jackson, Tennessee, reduces 10-inch, 3000 lb. aluminum ingots to finished strip 0.250 inch thick x 60 inch maximum width.

BLAW-KNOX
ALUMINUM REDUCTION MILLS

Blaw-Knox designs and builds a full range of mills for the reduction of Aluminum and other non-ferrous metals. Other Blaw-Knox equipment for the metals industry includes complete rolling mill installations including all auxiliary equipment for ferrous and non-ferrous metals, iron, alloy iron and steel rolls, Medart cold finishing equipment, carbon and alloy steel castings, fabricated steel plate or cast-weld design weldments, steel plant equipment, and heat and corrosion resisting alloy castings.

BLAW-KNOX

BLAW-KNOX COMPANY

Foundry and Mill Machinery Division
Blaw-Knox Building . 300 Sixth Avenue
Pittsburgh 22, Pennsylvania

FREE LITERATURE

This section starts on Page 108.

These publications describe money-saving equipment and services . . . they are free with no obligation . . . just circle the number and mail the postcard.

Differential Switch

Literature now available explains the workings of a differential switch for vacuum and low pressure. The switch comes in two classes for sensing pressure differences from 15 in. of water below atmospheric pressure to 80 in. of water above. (Barksdale Valves.)

For free copy circle No. 21 on postcard

Vibration Meter

Vibration can shake away profits if left unchecked. It's best to get rid of it. This destructive force can slowly cause uneven, excessive wear in every piece of equipment it affects. And it's not confined just to rotating or reciprocating machinery, it also attacks static devices (i.e., pipelines, air conditioners). A folder digs into vibration problems and describes an instrument that can help solve them. (Consolidated Electrodynamics Corp.)

For free copy circle No. 22 on postcard

Reversing Motor

Rapid reversing motors are described in a bulletin. It gives data on these 1½ to 125-hp units. (General Electric Co.)

For free copy circle No. 23 on postcard

Cutting Tools

Multi-purpose cutting tools are listed in a folder. It explains how important such tools are in present-day operations. To speed output modern production requires multiple operations be done with each pass of a single tool. Thus, the folder deals with tools which provide a combination of jobs (i.e., drill and ream, drill and counterbore, drill and countersink.) (Detroit Reamer & Tool Co.)

For free copy circle No. 24 on postcard

Copper-Nickel Alloy

An 8-page catalog analyzes a copper-nickel resistance alloy. This material is for "cold" resistor applications in electronic devices, precision instruments and the like. It offers mechanical stability and a low coefficient of resistance. (Hoskins Mfg. Co.)

For free copy circle No. 25 on postcard

Hydraulic Engineering

Hydraulic engineering specialists introduce themselves in a 12-page booklet. The literature covers the firm's facilities and services. It also illustrates and describes equipment made by the company. Included are: pumps, pump units and controls, valves, cylinders, trunnion cylinders, presses and special hydraulic systems. (Benjamin Lassman & Son.)

For free copy circle No. 26 on postcard

Roll Straightener

New literature gives prices and other data on a roll straightener. This machine contains 11 rolls instead of the usual nine. Especially recommended for working aluminum and soft materials, the straightener will also take steels. It decoils 0.010 to 0.200-in. thick stock, depending on width. (Benchmaster Mfg. Co.)

For free copy circle No. 27 on postcard

Fights Corrosion

Advantages of halofluorcarbon dispersion coatings for industrial corrosion control and contamination prevention are described in a 4-page booklet. (Minnesota Mining & Mfg. Co.)

For free copy circle No. 28 on postcard

Non-Pierce Fasteners

You don't have to put a hole in something in order to fasten some-

Postcard valid 8 weeks only. After that use own letterhead fully describing item wanted. **8/15/57**

Circle numbers for Free Technical Literature or Information on New Equipment:

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70

If you want more details on products advertised in this issue fill in below:

Page ..... Product .....

Page ..... Product .....

Page ..... Product .....

PLEASE TYPE OR PRINT

Your Name .....

Title .....

Company .....

Co. Address .....

City ..... Zone .....

State .....

FIRST CLASS
PERMIT No. 36
(Sec. 34.9 P.L.&R.)
New York, N. Y.

BUSINESS REPLY CARD
No postage necessary if mailed in the United States

POSTAGE WILL BE PAID BY

THE IRON AGE
Post Office Box 77
Village Station
NEW YORK 14, N. Y.

BUSINESS REPLY CARD

No postage necessary if mailed in the United States

POSTAGE WILL BE PAID BY

THE IRON AGE

Post Office Box 77

Village Station

NEW YORK 14, N. Y.

FIRST CLASS PERMIT No. 36 (Sec. 34.9 P.L.&R.) New York, N. Y.

Postcard valid 8 weeks only. After that use own letterhead fully describing item wanted. **8/15/57**

Circle numbers for Free Technical Literature or Information on New Equipment:

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
31	32	33	34	35	36	37	38	39	40
21	22	23	24	25	26	27	28	29	30
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70

If you want more details on products advertised in this issue fill in below:

Page ..... Product .....

Page ..... Product .....

Page ..... Product .....

PLEASE TYPE OR PRINT

Your Name .....

Title .....

Company .....

Co. Address .....

City ..... Zone .....

State .....

FREE LITERATURE

thing else to it. Instead you can employ non-piercing fasteners. Basically used for clipping insulation to metal roof decks, these fasteners might apply to other applications, too. (Geo. A. Tinnerman Corp.)

For free copy circle No. 29 on postcard

Electronics Units

Detailing a line of small size, self-balancing electronic potentiometers and bridges is a 4-page bulletin. (The Bristol Co.)

For free copy circle No. 30 on postcard

Stainless Steel

"Stainless Steel Data" is the title of a 16-page booklet. It contains some information not too widely known or available, along with more familiar data. A section covers metal finishes and treatments available on one maker's hex-socket screws. (The Allen Mfg. Co.)

For free copy circle No. 31 on postcard

Dust Control

If your plant is losing its battle with airborne dust, a new 16-page bulletin might come in handy. It presents details and pictures a completely new dust collector. (American Air Filter Co.)

For free copy circle No. 32 on postcard

Ultrasonic Gaging

Ultrasonic testers are outlined in a pair of technical bulletins. They deal with a resonance instrument which quickly, accurately detects corrosion and laminar flaws. It also measures metal thicknesses. (Branson Instruments, Inc.)

For free copy circle No. 33 on postcard

Materials Handling

Why bother with a whole crew of workers in a department when one man can do all the materials handling? This is the question asked by a company publication that suggests employing a one-man crew. This one man rides an electric fork truck. He zooms to and fro, stripping, loading and checking. Working alone allegedly saves time, increases efficiency. (Lewis-Shepard Products, Inc.)

For free copy circle No. 34 on postcard

Surface Roughness

Reduce machining costs and control surface finish, suggests a 24-page booklet. It goes on to explore surface roughness, waviness and lay. A culmination of years of work by the American Society of Mechanical Engineers, the publication defines geometric irregularities of solid material surfaces and physical surfaces for gaging roughness. (Brush Electronics Co.)

For free copy circle No. 35 on postcard

Hex, 12-Pointer Nuts

A 24-page section of a 144-page catalog lists hex and 12-point nuts. (National Machine Products Co.)

For free copy circle No. 36 on postcard

Decimals to Fractions

If you've been meaning to get a chart of decimal equivalents but never got around to it, here's your chance. A maker of cold-headed products is offering one. (John Hassall, Inc.)

For free copy circle No. 37 on postcard

Electric Motors

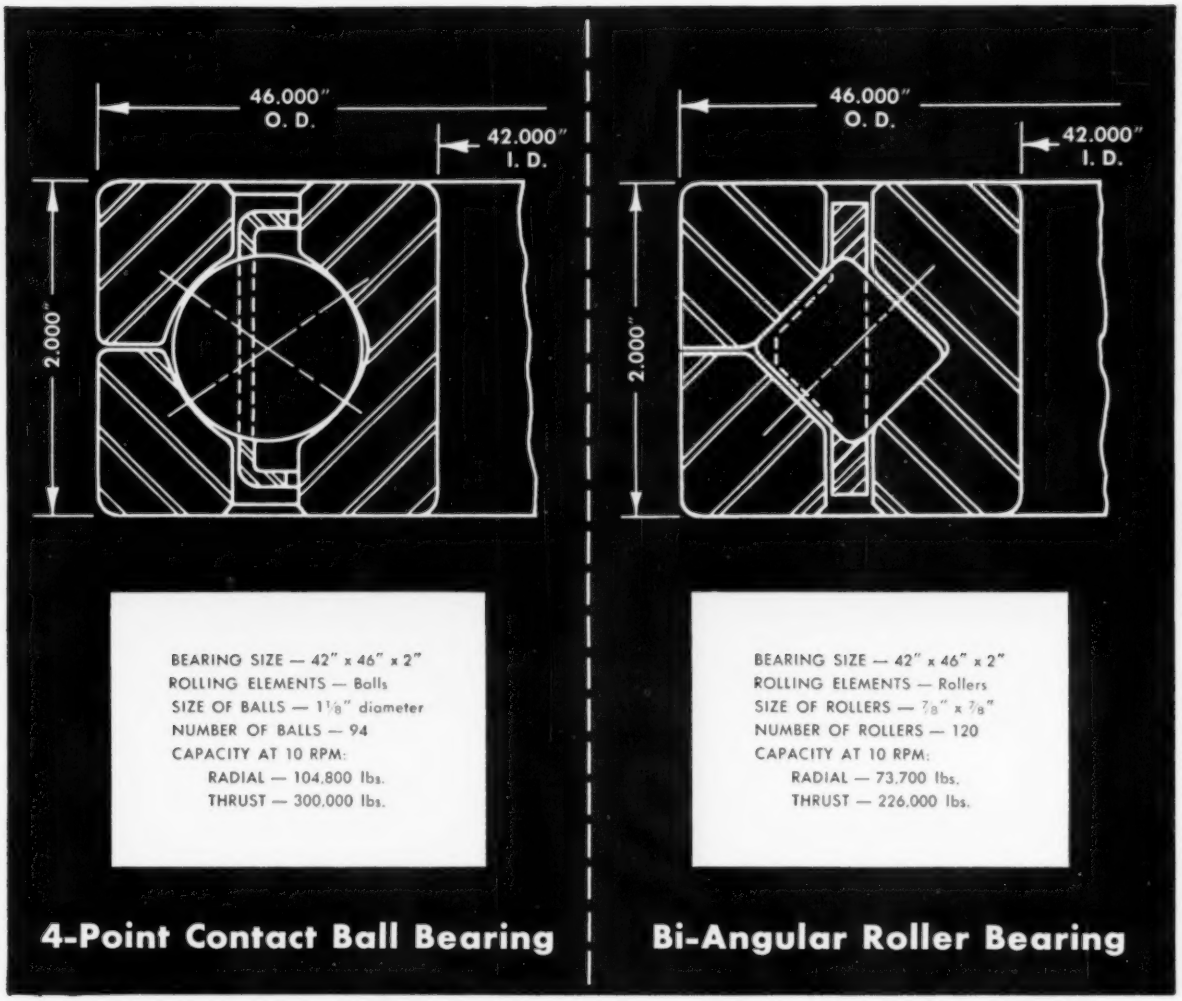
In 16-pages, a handbook deals with electric motor care. It points out that maintenance is important and offers some hints on proper procedures. (Chicago Electric Co.)

For free copy circle No. 38 on postcard

Tubular Heaters

Metal sheathed tubular heaters are well-illustrated in a 16-page brochure. It contains picture-story case histories on the successful use of these heaters by machinery manufacturers. Some applications: shrinking machinery, extruding machines, radiant ovens, paint heaters. (General Electric Co.)

For free copy circle No. 39 on postcard



SURE we make both, but we recommend only one

Yes, Kaydon manufactures both — 4-point contact ball and bi-angular roller bearings in the same diameters and widths. BUT — we would in almost every instance recommend the former. Why? Because our field application reports consistently prove that the 4-point contact ball bearings are better for most applications than the lower capacity bi-angulars *(See capacity figures in drawings above.)*

Another important difference between the two bearings is that the 4-point contact ball bearing *is not limited to low speeds*, whereas the bi-angular normally should not be used above 10 rpm and usually is suitable only for oscillation. Then, too, the torque in the 4-point contact ball bearings is generally much lower.

Kaydon's unbiased recommendations result from years of bearing design, application and manufacturing experience with *all types* of ball and roller bearings up to 124" in diameter. So, why not contact Kaydon first?

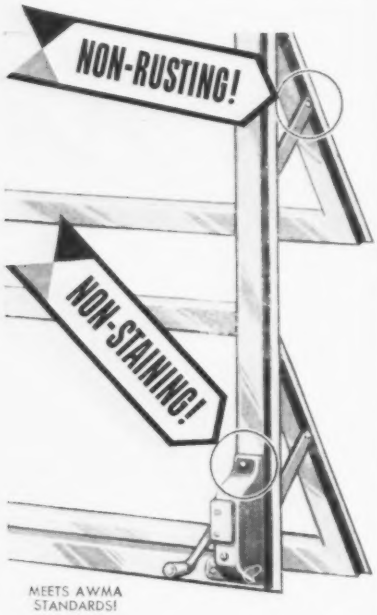
K-563

THE KAYDON ENGINEERING CORP.

MUSKEGON • MICHIGAN

All types of ball and roller bearings — 4" to 120" outside diameter . . .
Taper Roller • Roller Thrust • Roller Radial • Bi-Angular Roller • Needle Roller • Ball Radial • Ball Thrust Bearings.

How Alcoa Aluminum Fasteners make good windows even better



MEETS AWMA STANDARDS!

You can meet the highest standards of quality and the specifications of the AWMA (Aluminum Window Manufacturers Association) for prime windows of aluminum when you assemble with Alcoa® Aluminum Fasteners. Perfect color match and protection against both galvanic and atmospheric corrosion make for lasting good looks . . . consumer satisfaction. Complete stocks carried by your local Alcoa distributor fill every requirement. He is listed in the Yellow Pages of your telephone directory.

ALCOA ALUMINUM FASTENERS

Your Guide to the Best in Aluminum Value

®ACOA

THE ALCOA HOUR

Fill out coupon for facts, samples

Aluminum Company of America
2243-H Alcoa Bldg., Pittsburgh 19, Pa.

Gentlemen: Please send complete specification data and samples of Alcoa Aluminum Fasteners.

Name

Title

Company

Address

TECHNICAL BRIEFS

Floating Zone Refines Materials

Take a solid piece of metal; heat a small zone. On melting, impurities rush to it. Move this along, drawing impurities with it. At the end you have a contaminated section, but the rest is refined.

This, oversimplified, is floating zone refining; it works with silicon, molybdenum, tungsten, germanium—maybe many more materials.

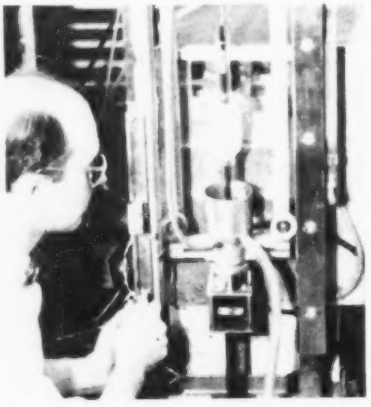
▪ An automatic refining device is reducing electrically active impurities in silicon to less than one part in one billion at Bell Telephone Laboratories. It utilizes the floating zone refining technique. This sweeps a molten zone through the silicon, carrying impurities with it.

The method can also be used to purify germanium, molybdenum, tungsten, and many other materials.

Sweeps Right Along—Zone refining works on the principle that most impurities are more soluble in molten than solid material. Thus, a molten zone sweeping along a rod of silicon accumulates impurities from the silicon. The technique is being successfully applied to refining a growing number of materials: metallic, inorganic, and organic.

No satisfactory solid crucible material has been found for containing silicon during the refining process. Fused silica, frequently used in zone refining, is atacked by molten silicon. For example, contact with commercial fused silica for one hour introduces about one to three parts per billion of electrically active impurities to molten silicon at 2642°F. The floating zone process, however, requires no crucible and so is free from such contamination.

How it Works—In Zone refining, the molten zone, supported only by surface tension, is passed along a vertical silicon rod rigidly held at both ends. Refining is performed in a controlled atmosphere by surrounding the rod with a water cooled gas-tight envelope.



Operator performs zone refining in controlled atmosphere.

Inductive heating produces the molten zone and motion of either the heating coil or the rod sweeps

Want More Data?

You may secure additional information on any item briefed in this section by using the reply card on page 114. Just indicate the page on which it appears. Be sure to note exactly the information wanted.

the zone along. This process is repeated, with the molten zone always traversing the rod in the same direction, until the desired purity is obtained.

Whirly-bird Lab Seeks Out Ore

An airborne laboratory contained in a Sikorsky S-55 helicopter is now being used by Aero Service Corp., Philadelphia, in its worldwide hunt for additional deposits of ores, rare earths and oil. The helicopter, with its electronic instrumentation, explores in hours ground which formerly took days or weeks to cover.

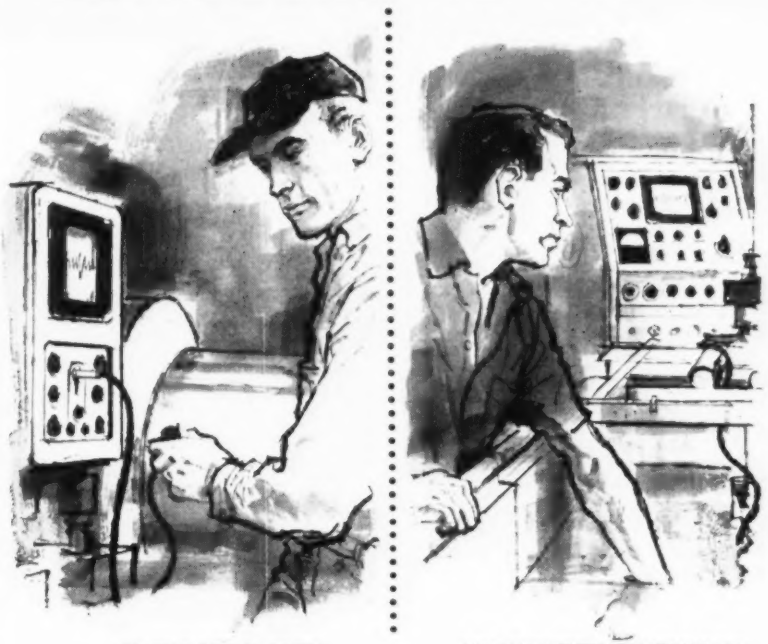
The aircraft is equipped with three separate detecting instruments, each sensitive to a different type of material. A magnetometer seeks out such ores as iron, ilmenite and nickel, as well as potential oil-bearing areas. An electromagnetic detector finds electrically conducting sulphides of lead, zinc and copper, while a scintillation counter responds to uranium, thorium and other radioactive elements.

The findings of these sensitive instruments are coordinated and recorded on a direct-writing oscillograph made by Brush Electronics Co., Cleveland, which instantaneously charts minute variations in signals received from the detecting instruments, as well as altitude information from a radio altimeter. The Brush unit makes it possible to keep track of second-to-second signals variations.

Enameled Strip Solves Problems

Several years ago a maker of metal stampings was faced with a serious problem. Operating 54 stamping presses, the firm used sheets of lithograph stock which had to be hand-fed. This process was so slow and costly that company executives were eventually forced to

ULTRASONIC TESTING–



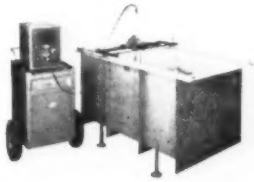
CONTACT or IMMERSION?

Either way, you're served best by the Sperry Reflectoscope

Both ultrasonic immersion and contact testing serve flawless purposes... the type to use is the one that serves your operation most effectively. The *equipment* to use to inspect your material or product for internal flaws is something we know a lot about.

The Sperry Ultrasonic Reflectoscope is admirably suited to *either* type inspection whether "tank" or "touch"... it can be used for one or the other with equally efficient results. Thus, you're not limited to one kind of testing. With the same basic equipment you could perform both immersion and contact testing if your operation required it. Or, whenever it was necessary, you could switch from one type of testing to the other. The Sperry Reflectoscope's "dual adaptability" makes it easy.

In manufacturing the Sperry Reflectoscope for both immersion and contact testing, we have acquired considerable experience in determining which type of testing is best suited to a given manufacturing operation. Should you require any assistance in this direction, we'll be only too glad to help you.



Complete Immersion Testing Systems, available at low cost, ready to use in the production line and laboratory. Call or write for specifications and descriptive literature.

To keep posted on latest developments in the profitable use of ultrasonic inspection, send for your free copy of our Ultrasonic Inspection News Letter. Write to:

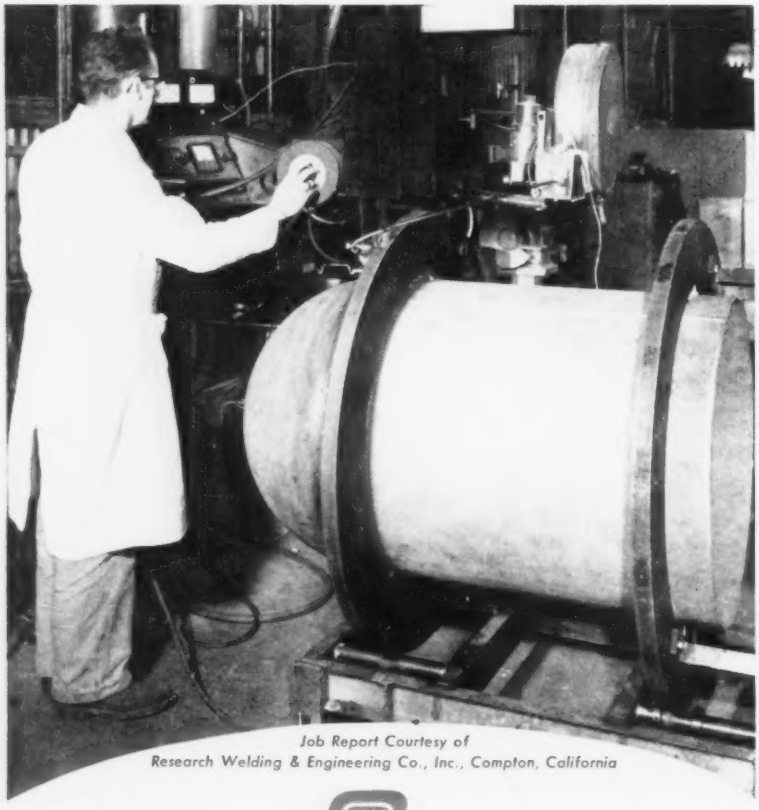
Sperry

306 Shelter Rock Road Danbury, Connecticut

sperry products INC.

FIRST IN ULTRASONIC INSPECTION

For flawless high strength weld metal in missile components



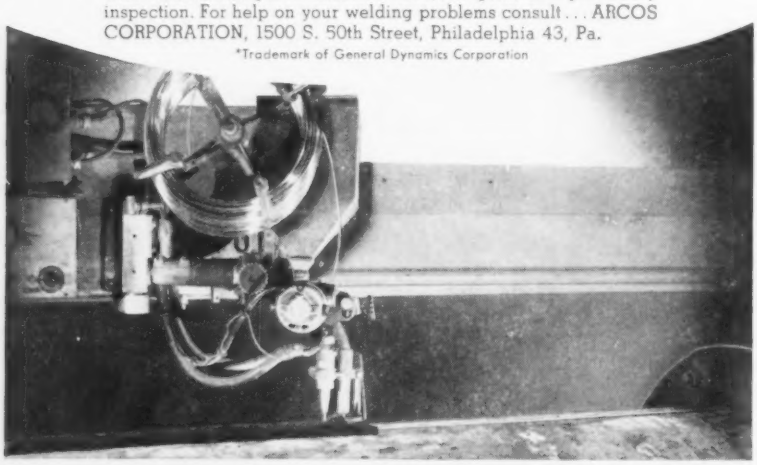
Job Report Courtesy of
Research Welding & Engineering Co., Inc., Compton, California

WELD WITH ARCOS

CHROMENAR Spooled Wire

Light weight was important in this welded missile component that was required to hold air under 3,000 p.s.i. pressure. After making the root pass weld with the Arcos EB* consumable insert, the weld was completed by submerged arc welding with Arcos CHROMENAR CMV welding quality wire. CHROMENAR CMV was selected because its weld metal could be heat treated to match the base metal with tensile strength in excess of 200,000 p.s.i. and pass x-ray inspection. For help on your welding problems consult . . . ARCOS CORPORATION, 1500 S. 50th Street, Philadelphia 43, Pa.

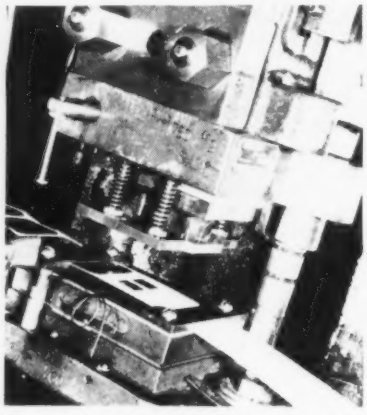
*Trademark of General Dynamics Corporation



revamp their entire production set-up.

One of the innovations introduced was adoption of strip precoated metal coil in place of lithographed sheet stock. The strip arrived at the plant, well packaged for easy handling, ready for the assembly line.

Automatic Stamping — With the adoption of this pre-coated metal coil, an automatic system for the operation of the stamping presses was introduced. The firm, Empire State Metal Products Co., New York, found that this speeded production, cut man-hours, and made profitable operation possible. Not only this, it also improved quality



Precoated metal coil goes through automatic stamping.

to a marked degree. Button and buckle forms, for example, now have a very fine, hard surface completely free of pock marks, due to the quality of the strip's coating. This withstands all cutting and stamping operations.

Not only did the strip material add efficiency to the actual production operations, but it made possible other economies as well. Its two-side coating permits easy change of color merely by reversing the roll in the stamping press. Inasmuch as the stamping outfit uses a great variety of colors, this two-sided coating has

cut storage space requirements drastically and has reduced inventory requirements. As a matter of fact, the company reports that it actually carries one-half its normal inventory before the production changes. Another important saving was effected in cutting down the waste in the cutting process which formerly was a considerable cost factor.

Press Operates Better—Another vital improvement effected by the pre-coated coil is in the operation of the stamping press itself. The buckle forms are stamped clean, there are no claims or returns due to oil stains on dresses and other merchandise encountered previous.

The strip material is a product of Enamelstrip Corp. of Allentown, Pa., Coated Coil Corp., New York, distributes it.

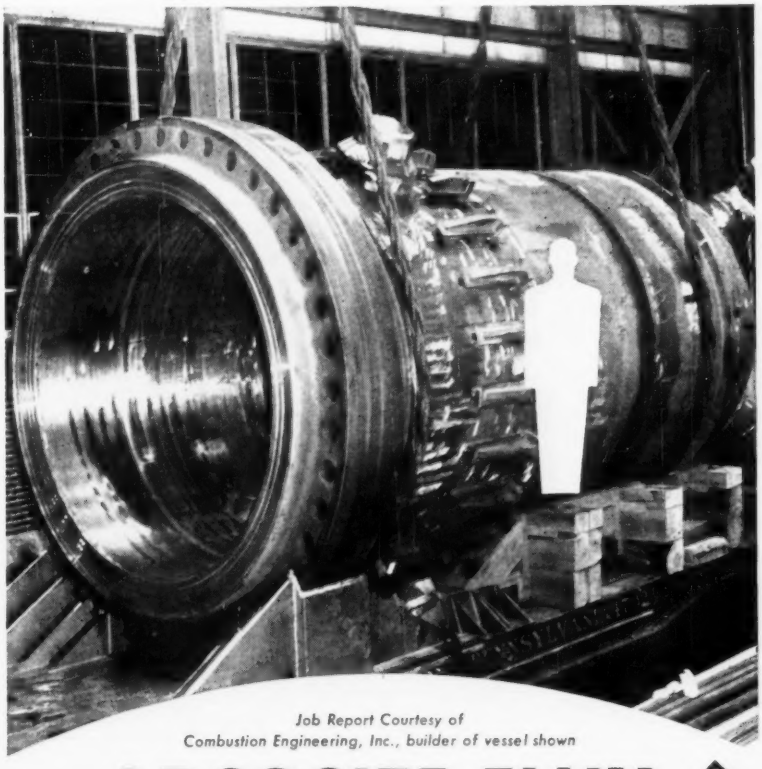
Ceramic Cutters Are Small Shop Assets

Small machine shops can gain definite advantages from the use of ceramic cutting tools. So advises the Small Business Administration in a new leaflet.

"The small machine shop may find ceramic tools the practical answer to turning hard materials and for big work where the turning time on individual pieces is considerable, and where fast cutting rates on high production runs are important," the leaflet says, adding: "They are ideal for machining abrasive materials; the lowered tool cost alone may justify their use. Ceramic tools have been used to machine carbon and alloy steels which had been heat-treated to 300 Bhn, and produced fine finishes difficult to attain with other cutting tools."

Many Advantages — The leaflet points out reasons for using ceramic cutting tools. It highlights the fact that if another national emergency arises, tungston carbide would be a critical material. Cutting tools of ceramic would be practical substitutes. "A shop experienced in the

This WELDED nuclear pressure vessel holds a practical idea for you

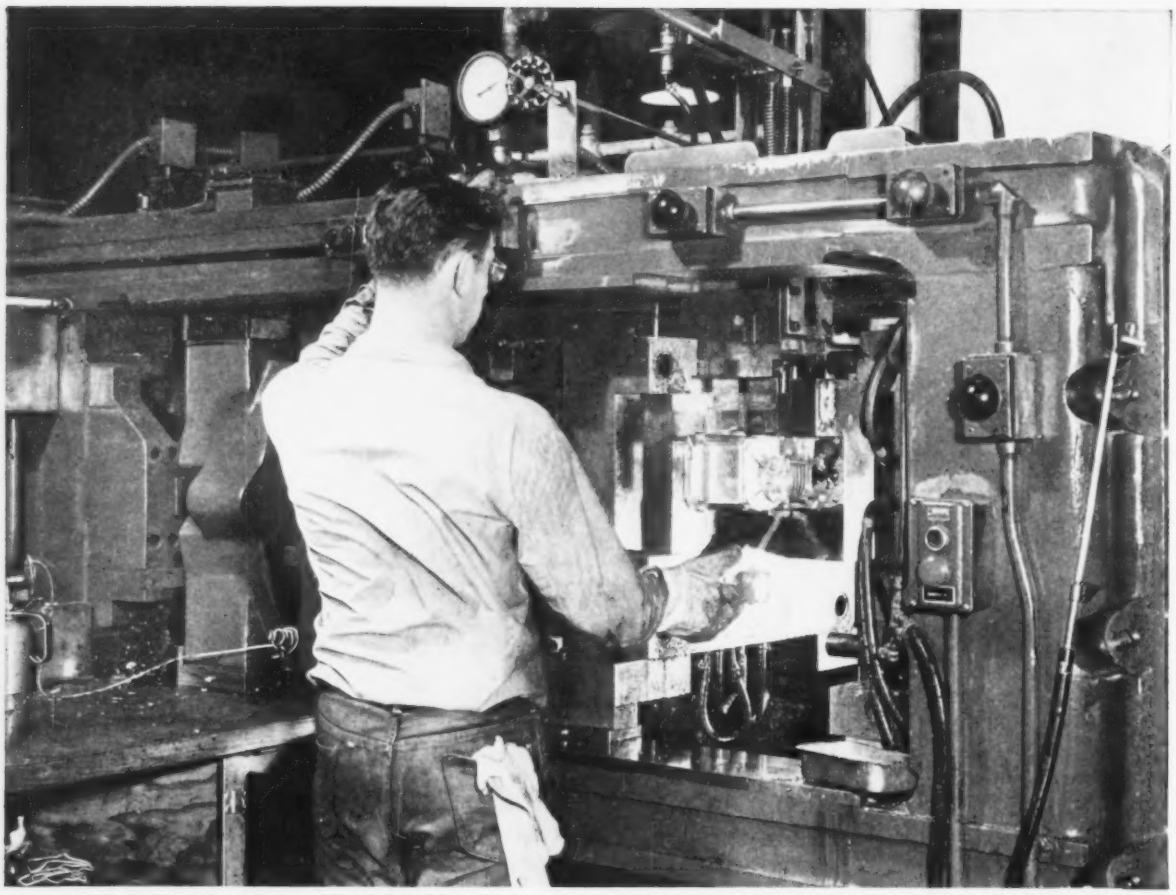


Job Report Courtesy of Combustion Engineering, Inc., builder of vessel shown

USE ARCOSITE FLUX

for submerged arc welding

In nuclear installations where radio activity makes weld failure dangerous to personnel and can cause indefinite shutdown, sound corrosion resistant welds are of utmost importance. To inhibit corrosion, portions of the 9 ft. dia. interior of this 33 ft. reactor were overlaid with ¼ in. of 308L weld metal. Submerged arc welding with ARCOSITE S4 flux was used for the job. The girth and longitudinal joints of the low alloy steel plates were also submerged arc welded using ARCOSITE 85 flux. Cost-wise, no other conventional method of cladding was practical. Arcos weld metal quality guarantees corrosion resistance . . . freedom from maintenance. ARCOS CORPORATION, 1500 S. 50th Street Philadelphia 43, Pa.



Cast Nickel Steel Frame heat treated to a minimum tensile strength of 100,000 pounds per square inch, yield strength of 80,000, provides properties needed to handle stretching action caused by 800-ton clamping force. This 40,000-pound die casting machine was built by Lester Engineering Company, Cleveland, Ohio.

Stretches with no permanent set...

High strength of nickel steel casting boosts life of repetitively stressed machine frame

The cast nickel steel frame on the die casting machine above accepts and recovers from a clamping force of 800 tons 100 times-an-hour... round the clock!

This punishing stress cycle caused Lester Engineering Company, builder of the machine, to discard four differently designed frames fabricated from mild steel. The firm then switched to a nickel steel frame casting which has proven completely dependable.

On the basis of this performance, Lester Engineering has standardized on cast nickel steel frames for its entire line of plastic molding and metallic die casting machines.

For high strength, toughness and impact resistance

Nickel steel castings offer a combination of properties that might be the key you have been looking for to improve performance and service life of your own machines and machine tools.

For a look-see on how you can take advantage of the properties of nickel steel castings, send for your copy of "Nickel Alloy Steel Castings in Industry."

And remember

INCO NICKEL ... brings you INCO+SERVICES

Whenever you are looking for answers to your metal problems, all the information and help we can give you are yours for the asking. For instance ...

- + Corrosion Service
- + High Temperature Service
- + Casting Information
- + Field Information Centers
- + Technical Publications

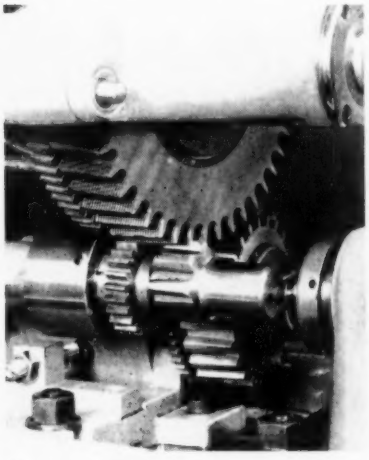
INCO THE INTERNATIONAL NICKEL COMPANY, INC. 67 Wall Street New York 5, N.Y.

use of ceramic cutting tools would be essential to emergency defense production schedules," it says.

Shaves Teeth, Deburrs Gear OD at Same Time

Performing every machining operation at once on a part is nice when you can do it. It certainly gets a finished piece off the production line in a hurry. But converting from one step at a time working can be expensive though. It sometimes means buying completely new special units.

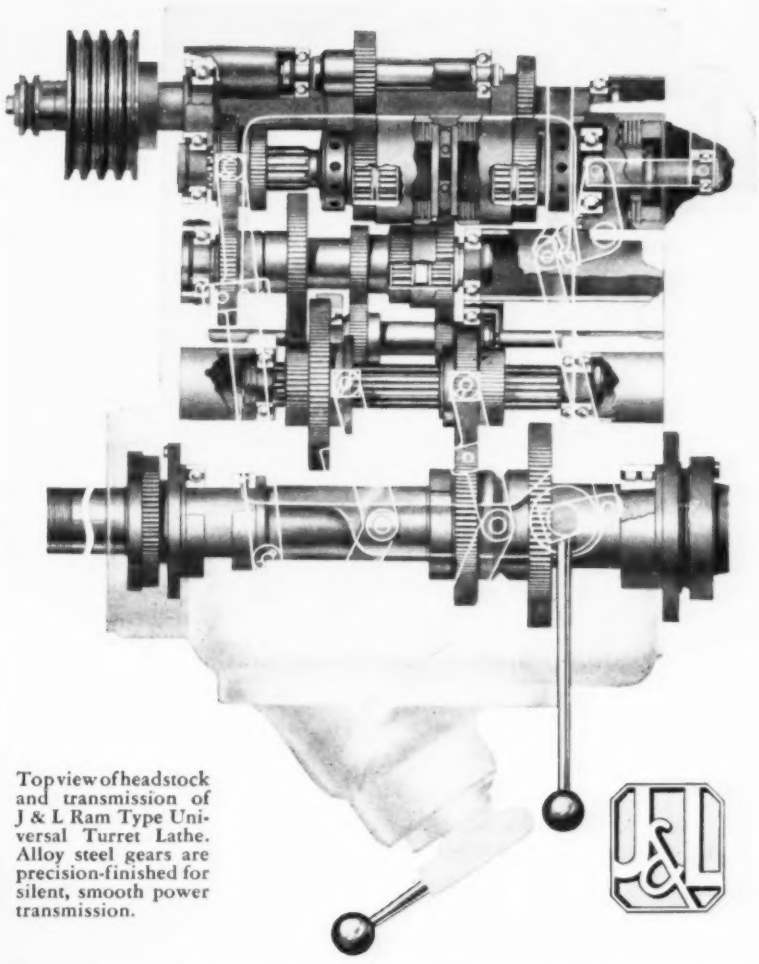
With this idea in mind, a producer of gear machinery has developed a setup that lets conventional machines shave gear teeth



One operation shaves gear teeth and finishes outside diameter.

and finish the outside diameter of gears in one operation. The unit turns out finished steering gear segments having tapered teeth. The same idea could apply to other operations.

Old Ideas Out Window—To develop this dual-worker, National Broach & Machine Co., Detroit, designed an entirely new type of rotary deburring tool in the form of a gear. This high speed steel tool has a conical involute (tapered)



Top view of headstock and transmission of J & L Ram Type Universal Turret Lathe. Alloy steel gears are precision-finished for silent, smooth power transmission.

J&L

Perkins Gears Used by Jones & Lamson

Jones & Lamson Machine Company, famous as manufacturers of the world's most accurate and powerful turret lathes, use Perkins precision gears for efficient, dependable performance. Perkins custom-cut gears are precision-made to exact specifications. They eliminate wear, noise and backlash. Our OEM customers know Perkins means dependable service and longer gear life. Perkins' long experience in producing precision gears could bring profitable benefits your way, too! Ask our engineers to work with you designing or estimating your next gear order.

WRITE TODAY for folder showing bevel, spiral, helical and spur gears; ratchets, sprockets and ground-thread worms; face gears, generated and curvic clutches; made by Perkins in many sizes from all materials.

Perkins Machine & Gear Co., West Springfield, Mass.

Name_____

Company_____

Address_____

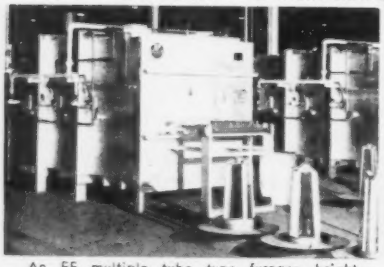
PERKINS

MACHINE AND GEAR CO.

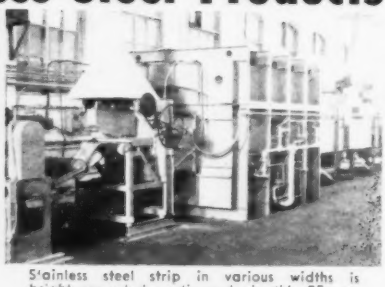
Dept. 41, West Springfield, Mass.

Telephone: REpublic 7-4751

FURNACES
for
Bright Annealing
Stainless
Tubing, Strip, Wire, Stampings and Other Stainless Steel Products



An EF multiple tube type furnace bright annealing stainless steel wire, continuously. One of an installation of five in one plant.

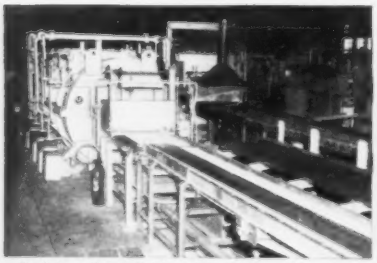


Stainless steel strip in various widths is bright annealed continuously in this EF gas fired special atmosphere installation.

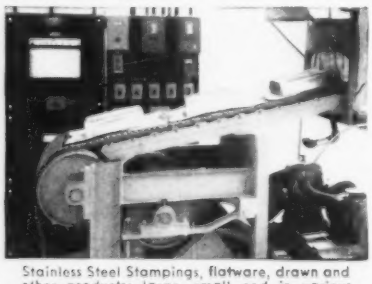
Stainless steel strip, wire, heavy and fine tubing, stampings, flatware, cooking ware, drawn and other stainless steel products, in many shapes and forms, are being bright annealed, uniformly, economically, continuously and with laboratory precision in EF furnaces.

Extensive experience with stainless steel problems, backed by over 40 years of practical furnace building experience and thousands of successful fuel fired and electric installations, enable EF engineers to design and build the best size and type of equipment needed for handling any product or production, or for any heat processing requirement.

Submit your production furnace problems to experienced EF engineers — it pays.



Stainless Steel Tubing in various diameters and lenaths is bright annealed continuously in this EF gas fired furnace.



Stainless Steel Stampings, flatware, drawn and other products; large, small and in various shapes are bright annealed in EF furnaces.

EF

BULLETIN No. 461

shows typical installations of EF Gas-fired, Oil-fired and Electric Furnaces.

Send for a copy today!

THE ELECTRIC FURNACE CO.

GAS FIRED OIL FIRED AND ELECTRIC FURNACES FOR ANY PROCESS, PRODUCT OR PRODUCTION *Salem - Ohio*

Canadian Associates • CANEFCO, LIMITED • Toronto 1, Canada

tooth shape. It meshes with the gear segment.

The deburring tool teeth's root portion is shaped so that the shaving burr at the outside diameter of the gear is removed as it is produced. The deburring tool mounts on an auxiliary spindle on the table at the rear of the shaving machine head and tailstocks. Good timing relationships between the shaving cutter, the work driving head and the deburring tool are provided by a precision gear train.

Slag Handlers Slash Maintenance Time

Reclaiming iron from openhearth and blast-furnace slag really can beat-up handlers and separators. With thousands of tons daily smashing and grinding against its equipment, one processor was saddled with two days of welding time per week.

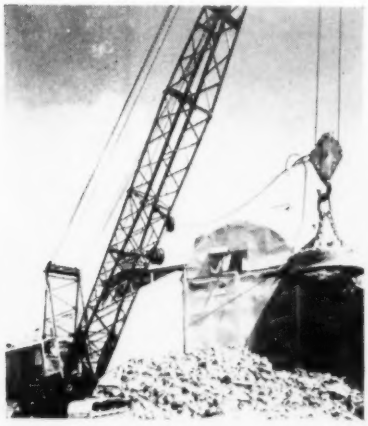
Weary from so much maintenance, The Thomas Connelly Co., Hammond, Ind., switched to a wobbling type feeder. After handling almost a million tons of material, the firm reports, "So far, we don't see any wear." Not only this, the company also saves $3500 a month by not using a crane once needed with the operations. Now, a routine four maintenance hours a month is normal.

What It Does—Some 6400 tons of slag go through the setup daily. The company reclaims the iron and processes the rest with screens and crushers. Until last year, it had employed a bar grizzly to separate fines from oversize pieces. This is done prior to screening. One crane had a full-time job of keeping the bars cleaned off.

To replace the unit came a feeder separator from the Fisher Contracting Co., Alma, Colo., where it separated 300,000 tons of granite on a dam building project. This

meant that the unit had about a third of a million tons of wear prior to its use at the slag plant.

Housed In Hut—Housed in a quonset-type structure for dust control purposes, the feeder is the heart of the slag reclamation setup. A continuous stream of 60-ton trailers dump loads of openhearth slag into a hopper receiver at the



Wobbling type feeder handles slag without wear.

top. Fine material in the load passes through openings between the wobbling bars. This drops to a vibrating screen. Then conveyors take it to magnetic separators, crushers and stockpiles.

Oversize hunks in the dump loads are chuted away off the delivery end of the feeder and out the back of the structure to a spoils pile. Here, a crane and magnet salvage whatever iron there is.

Low Horsepower — A 15-hp motor drives the feeder separator. A key anti-wearing feature of the unit is its graduated openings between bars. These distribute the load over the feeder's entire length.

The equipment, known as the Wobbler Feeder, is a product of The Universal Engineering Corp., a subsidiary of Pettibone Mulliken Corp., Cedar Rapids, Ia.

Soap Lubes Stampings

Some 700-lb of stampings per hour are heat treated in a company's annealing furnace and then

HOW *Cambridge* Woven Wire Belts help Heat Treaters

increase uniformity, speed production

By providing continuous movement through heat treating cycles, woven wire conveyor belts eliminate batch handling, increase product uniformity and production capacity in annealing, brazing, quenching, tempering, sintering, etc. EXAMPLE:

Continuous Annealing

MOVING BELT carries a stream of brass light bulb ferrules through furnace for continuous uniform annealing at 1400° F.

OPEN MESH of Cambridge belt allows free circulation of heat around load so that hot spots are eliminated. Open mesh construction also permits rapid drainage in wet processes such as quenching and washing.

ALL-METAL BELT withstands heat up to 2100°F. (as in copper brazing) without damage, provides lasting strength because there are no seams, lacers or fasteners to break or wear.

SPECIAL RAISED EDGES hold parts on belt, are typical of a variety of side and surface attachments available to hold the product during flat or inclined movement.

Cambridge Woven Wire Conveyor Belts are made in any size, mesh or weave, from any metal or alloy, and can be used under a wide range of conditions . . . hot or cold, wet or dry. Call your Cambridge Field Engineer to discuss how you can cut costs with continuous processing on woven wire conveyor belts. Look for his phone number under "Belting, Mechanical" in the Yellow Pages or write for FREE 130-PAGE REFERENCE MANUAL.

The Cambridge Wire Cloth Co.

Department A, Cambridge 8, Maryland

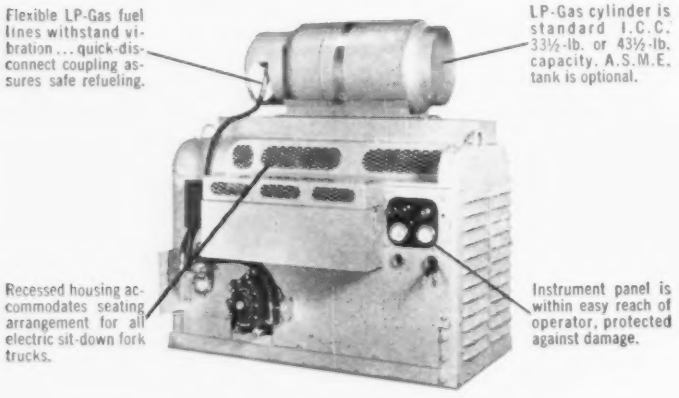
WIRE CLOTH | METAL CONVEYOR BELTS | SPECIAL METAL FABRICATIONS

OFFICES IN PRINCIPAL INDUSTRIAL CITIES

Ready-Power LPG-Electric Power Unit for Sit-Down Trucks

MODEL HA-3 FOR 4000-6000 LB. FORK TRUCKS

Now, get the advantages of full-time LPG-electric power for *any* electric, sit-down fork truck, regardless of make or model. Compact Ready-Power model HA-3 accommodates all seating arrangements . . . assures remarkably low-cost operation . . . minimizes objectionable fume problems. Compact LP-Gas cylinder is mounted on top of engine-generator housing for quick, easy interchangeability. Hinged cover and side plate give easy access to engine accessories; removable end plate permits service of generator. LP-Gas components are listed by Underwriters' Laboratories and comply with Factory Mutual recommendations. Write today for full information.


Flexible LP-Gas fuel lines withstand vibration . . . quick-disconnect coupling assures safe refueling.
LP-Gas cylinder is standard I.C.C. 33½-lb. or 43½-lb. capacity. A.S.M.E. tank is optional.
Recessed housing accommodates seating arrangement for all electric sit-down fork trucks.
Instrument panel is within easy reach of operator, protected against damage.

READY-POWER

The READY-POWER Co., 3822 GRAND RIVER AVE., DETROIT 8, MICH.

Manufacturers of Gas and Diesel Engine-Driven Generators and Air Conditioning Units; Gas and Diesel-Electric Power Units for Industrial Trucks

fed to an automatic soap coating unit. This coater, in use at Worcester Pressed Steel Co., Worcester, Mass., works hand-in-hand with the furnace.

Stampings of low carbon steel, stainless steel or nonferrous metals are first treated in the intermediate

Soap-coating unit and furnace work as a team.

annealing furnace. This unit is equipped with a 30-in. wide conveyor belt and a 12-in. high entrance door. It has a maximum temperature of 2050°F.

Following annealing, an automatic handling unit lifts the stampings from the furnace and places them in the coater. Here, the unit sprays on a coat of soap which acts as a lubricant. An oven in the coater dries the stampings, resulting in a dry lubricant film.

For Safety— Bright Colors

The adoption of a full-scale safety color code has brought a bright new look to the Baltimore Works of Armco Steel Corp. and, along with it, a sharp reduction in accidents.

Practically every piece of machinery and equipment in the stainless steel plant has been painted a

One of . . .

Northern Ohio's Largest Industrial Distributors Stocks YOUNGSTOWN STEEL PIPE Exclusively

Akron's 97-year-old Hardware & Supply Co. knows quality pipe—its customers demand only the best pipe—so every length in their stock room is marked—"Youngstown". As this veteran distributor's thousands of customers in the Akron-Canton-Massillon area have found from experience, it will pay you to know and deal with your nearest Youngstown distributor. He's in business for only one reason—to supply what you want, when you want it, and in the quantity you require.

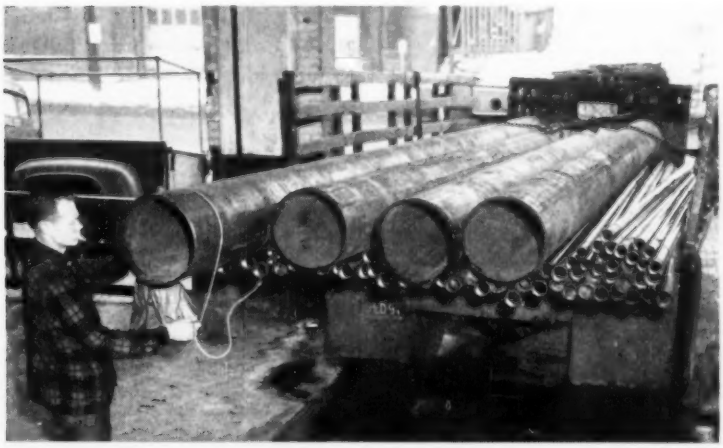
The Hardware & Supply Co. is typical of leading Youngstown distributors throughout the country who provide:

- Immediate delivery from large, complete stocks which permits reduction of your inventory
- A single source of supply that will simplify and expedite your purchasing, receiving, and bookkeeping, and,
- 24-hour service—365 days a year

Your Youngstown Distributor is waiting to serve you—why not call him today?

Next time you need steel pipe—for any use—specify Youngstown and secure these 7 points of uniform goodness

uniform ductility
uniform lengths
uniform threading
uniform weldability
uniform wall thickness and size
uniform strength and toughness
uniform roundness and straightness



Another load of quality Youngstown pipe is ready to leave the shipping dock—an hour after the order is received.

Hardware & Supply Co. can fill any customer's order from their large, complete stock of Youngstown pipe.

YOUNGSTOWN PIPE

QUALITY YOUNGSTOWN SERVICE

THE YOUNGSTOWN SHEET AND TUBE COMPANY

Manufacturers of Carbon, Alloy and Yoloy Steel

General Offices - Youngstown 1, Ohio

District Sales Offices in Principal Cities

HOW DATED ARE YOUR IDEAS ABOUT SMOKE CONTROL?

MAKE SURE THAT YOU HAVE THE MOST EFFICIENT METHOD FOR YOUR PARTICULAR PROBLEM

Most reliable air pollution engineers agree that electrostatic precipitation has the widest range of application for controlling smoke and the resulting odor. The SMOKATRON electrical precipitator meets the qualifications of today's rigid smoke controls, and is designed to remain effective in the face of even more stringent controls. Ask about our deferred payment plan.

Call or Write For Our Free Engineering and Estimate Service

SMOKATRON

Smokatron Division
Summer & Co.
555 Buttles Ave.
Columbus, Ohio

specific color for purposes of marking physical hazards, the location of safety equipment and the identification of fire and other protective apparatus.

Reds, yellows, blues, oranges, greens and whites abound—both in the interior and outside the plant. Some of the machines have as many as five different colors to indicate dangerous parts and designate caution.

Locomotives and overhead cranes sparkle with bright color. Even rest benches, water fountains and trash cans are included in the full-plant color scheme.

The new safety code defines the application of colors to specific purposes this way:

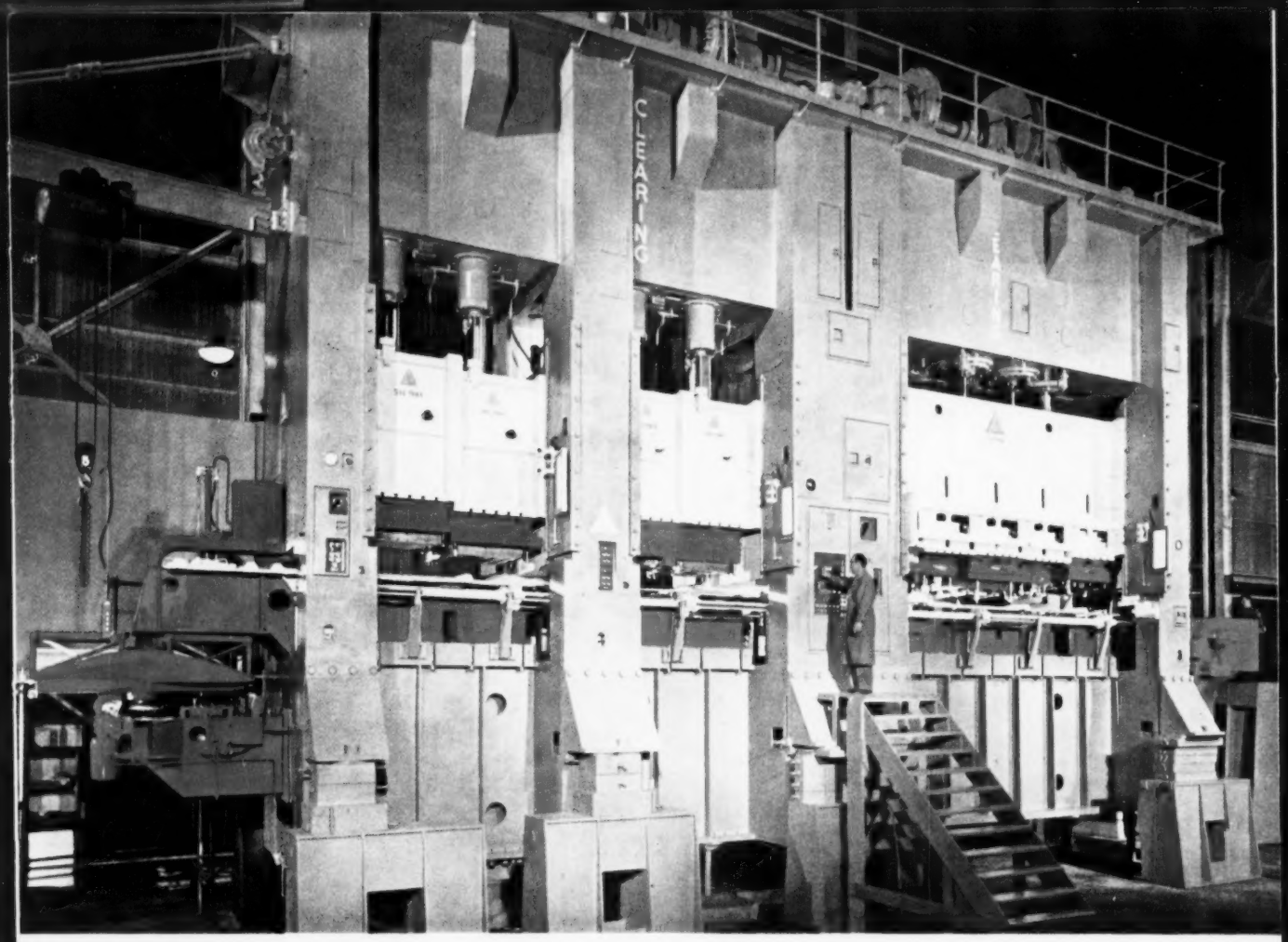
Red—For identification of fire protection equipment and apparatus; to signify danger in portable containers of flammable liquids; and for danger and stop signs.

Orange—For designating dangerous parts of machines or energizing equipment which may cut, crush, shock or otherwise injure and to emphasize such hazards when enclosure doors are open or removed or when gear, belt, or other guards around moving equipment are open or removed, exposing unguarded hazards.

Yellow—For designating caution and for marking physical hazards that workers might strike against, stumble over or be caught between. These include bulldozers, tractors, carryalls, lifts, unguarded edges of platforms and pits, hand and guard rails, locomotives, pulley blocks and cranes, pillars and posts, and waste containers for highly combustible materials.

Green — For designating safety and the location of First Aid equipment. This color is used on bulletin boards, stretchers, safety deluge showers, gas masks and first aid kits.

Blue — For designating caution, limited to warning against the



The future of press automation...HERE TODAY!

We call it a Transflex Modular press at Clearing. Transflex means the feed is designed to be readily adjustable to take on parts of varying dimensions and shape. *Modular* means that the press is built on the building block principle. If future requirements change radically, the press can be reassembled along completely different lines—even split up and run as separate units—to provide for these changes. So here is press automation with a long range future. For all practical purposes, obsolescence proof—that's what we mean by the future of press automation.

General Electric will produce two different parts on this machine. They will run one part for a few hours. Adjust the slide and dies. Then run the next part. Needless to say, this one machine does all the stamping operations and can keep well ahead of total requirements for both parts.

A fantastic development? Yes. But this is only one of the many ideas you can find at Clearing for more efficient production of small and large parts. Just ask us about them. We have a lot of things to talk about and a wealth of material to send you. No obligation.

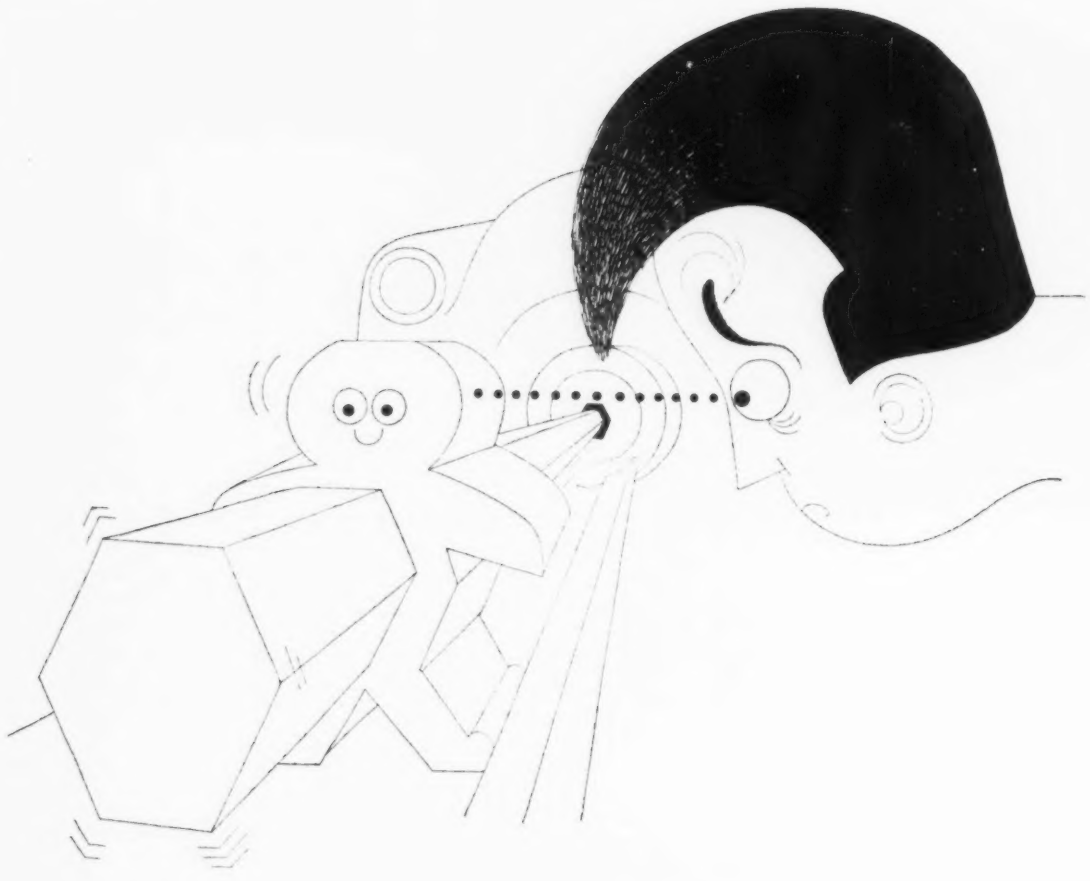
CLEARING PRESSES THE WAY TO EFFICIENT MASS PRODUCTION

CLEARING MACHINE CORPORATION

6499 W. 65th STREET • CHICAGO 38, ILLINOIS • HAMILTON PLANT • HAMILTON, OHIO

division of **U. S. INDUSTRIES, INC.** USI

CMC CLEARING



Extrusion a problem?

THEN TRY CRUCIBLE CHRO-MOW HOT WORK TOOL STEEL. IT'S TOUGH, RESISTS WEAR AT ELEVATED TEMPERATURES. AND YOU CAN GET IT QUICKLY FROM LOCAL CRUCIBLE WAREHOUSE STOCKS.

CHRO-MOW possesses an excellent combination of toughness and red hardness, and resistance to heat checking. It also resists cracking during water cooling. CHRO-MOW is particularly recommended for mandrels and tools which reach 500 to 1000F in service.

There are dozens of special tool steels, like CHRO-MOW, regularly stocked at local Crucible warehouses.

Make Crucible your regular source for special steels and for helpful advice on their use. For Crucible is the only specialty steel producer *fully integrated to the point of use*. That means control and responsibility from raw material to warehouse delivery to you.

STOCKS MAINTAINED OF:
Rex High Speed Steel . . . ALL grades of Tool Steel (including Die Casting Die and Plastic Mold Steel, Drill Rod, Tool Bits, and Hollow Tool Steel Bars) . . . Stainless Steel (Sheets, Bars, Wire, Billets, Electrodes) . . . Max-el, Hy-Tuf, AISI Alloy . . . Onyx Spring, Hollow Drill Steel and other special purpose steels.

CRUCIBLE WAREHOUSE SERVICE

Crucible Steel Company of America

General Sales Offices, The Oliver Building, Mellon Square, Pittsburgh 22, Pa. Branch Offices and Warehouses: Atlanta • Baltimore Boston • Buffalo • Charlotte • Chicago • Cincinnati • Cleveland • Dallas • Dayton • Denver • Detroit • Grand Rapids Harrison • Houston • Indianapolis • Los Angeles • Milwaukee • New Haven • New York • Philadelphia • Pittsburgh • Portland, Ore. Providence • Rockford • San Francisco • Seattle • Springfield, Mass. • St. Louis • St. Paul • Syracuse • Toronto, Ont.

starting, the use of, or the movement of equipment under repair or being worked upon. These include elevators, ovens and vats, tanks, kilns, boilers, electrical controls, dryers, valves, scaffolding and ladders.

Black and White — For the designation of traffic and housekeeping markings. Location and width of aisleways, stairways, dead ends of aisles and directional signs are painted these colors. Also drinking fountains and food dispensing locations, bulkheads and locations of refuse cans.

Silver—This is used on moveable scrap pans, trash cans, trailer bodies and under piping in washrooms and in dark work areas.

Gray — All work benches, rest benches and locker benches.

Three basic colors—vista green, focal ivory and focal beige — are used on machinery such as wire benches, pointers, lathes, centerless grinders etc., giving the entire plant a truly colorful look.

In addition to preventing accidents, the new color scheme improves working conditions and boosts morale.

Heating Setup Thaws Ore Cars Rapidly

Minutes are all it takes to thaw ore cars, thanks to a new method. Utilizing infra-red rays produced by a gas infra-red generator, the heating setup is said to substantially reduce the costs of thawing and handling.

Up to this time, some ore and coal shipping operations have been curtailed from the end of November until mid-April because ore froze in rail cars at the loading point. These could not be dumped or handled economically after reaching their destination. Conventional thawing methods now in use, in addition to requiring considerable time, are extremely costly to operate.

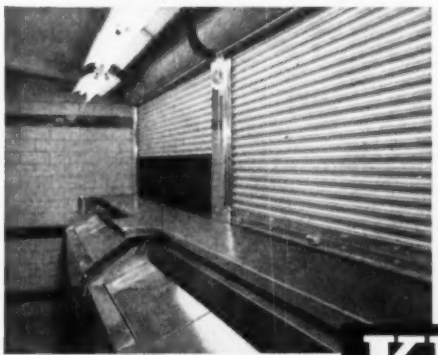
Unfreezes Quickly—In a recent demonstration, a railroad ore car

Kinnear Steel Rolling Grilles
CONTROL SPACE

without blocking light, air, sound or vision

Coils Out of View When Not in Use! Artistic, modern beauty and great strength *plus space-saving convenience!* Kinnear Rolling Grilles are ideal for "space control" — closing off corridors, bays, or other room areas. Curtain of heavy round bars locked in rugged steel links defies burglars, trespassers, vandals. Coils upward, stays out of view until closed and locked. Heavily galvanized for lasting beauty (aluminum or bronze also available). For face-of-wall or under-lintel mounting. Any size. Manual or motor control. Send for full information.

KINNEAR Rolling Counter Shutters Also Provide Space-Saving Protection



The counter shutter that coils upward, completely out of the way! Protects with a rugged all-metal curtain when lowered. Made like the famous Kinnear Steel Rolling Doors used so widely in service openings of all types, but with a curtain of one of Kinnear's "midget" slats. For all counter openings up to 20' wide. Steel, aluminum, bronze, or stainless steel. Write for details.

The KINNEAR Mfg. Co.
FACTORIES:
1760-80 Fields Avenue, Columbus 16, Ohio
1742 Yosemite Ave., San Francisco 24, Calif.

KINNEAR
ROLLING DOORS
Saving Ways in Doorways

Bright Annealing?
Normalizing?
Nitriding?
Spheroidizing?

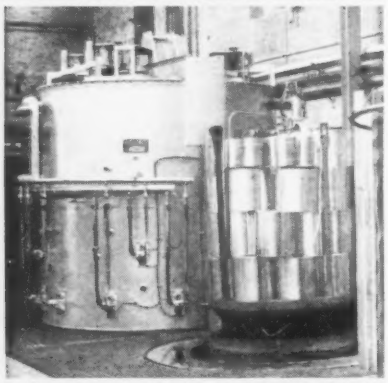
You can't beat CONTINENTAL TOP HAT

COVER-TYPE ANNEALER

Faster and More Uniform Heating Rate
Extra large volume of recirculating atmosphere.

Highest Production per Unit

Versatility
Can be used for bright annealing, normalizing, nitriding, or spheroidizing coiled wire or strip—ferrous or nonferrous.

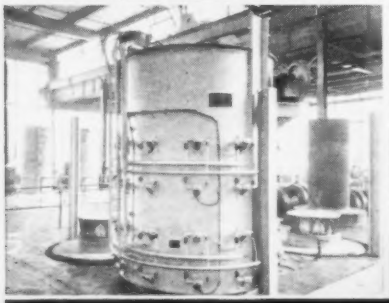


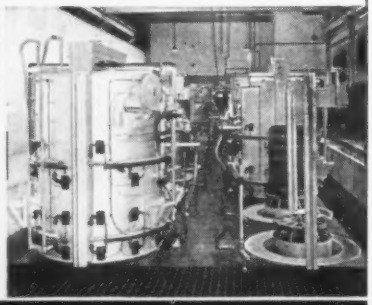
High Efficiency
No radiant tubes.

Long Hood Life
No flame impingement.

Full particulars and recommendation for any job on request.

6367





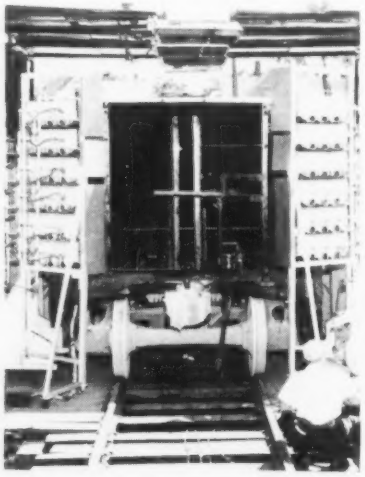
Over One-Third of a Century of Progress in
FURNACES · PRODUCTION LINES · SPECIAL MACHINES · COMPLETE PLANTS
CONTINENTAL INDUSTRIAL ENGINEERS, INC.
176 West Adams Street, Chicago 3, Illinois

was filled to capacity with 80 tons of iron ore. It was then frozen to a depth of six to eight inches on all sides, top and bottom—a condition typical of mid-Winter operations. By employing a bank of heating units, the car was thawed completely and dumped in a matter of minutes.

The demonstration was carried out in cooperation with the Duluth, Missabe and Iron Range Railway Co. by Perfection Industries Div., Hupp Corp., Cleveland.

New Heating Unit—Heating units used for the thawing operation represent a new approach to infra-red heat generation. Developed by a German scientist, the generators are now being manufactured by Perfection Industries.

An operating temperature of 1650°F is achieved in the generator by burning gas on the surface of a ceramic mat. Each mat is perforated with 200 holes per square inch through which an air-gas mixture feeds. The gas is converted into infra-red energy in wave lengths readily absorbed by most materials in every day use.



Unique Cars Haul Slag

Two specially designed slag cars handle front flashing of Weirton

3 SIMONDS Production Saws that say "SOCKO" to High Cost Cutting

INSERTED TOOTH SAW — A real champion for production cutting of steel, brass, copper, aluminum. Alternately beveled and square High Speed Steel Teeth "tri-vide" chips for easy cutting and clearance in large cross-section and high speed sawing operations. The alloy steel plate is tough and shock-resistant. Easy, "do it yourself" replacement of the High Speed Steel Teeth simplifies maintenance.

SEGMENTAL SAW — For smoother finish production cutting or where finer teeth are required for thinner cross-sections. Longer service High Speed Steel segments (tongued or slotted type) in a tough alloy steel plate cut true, fast and free. Teeth are alternately square and beveled for easy clearance of "tri-vided" chips. Sharpen on any automatic grinder.

SOLID TOOTH SAW — For cutting small bars, extrusions, pipes and where narrow kerf is desired. Preferred for occasional cutting because of lower saw cost. Alternately beveled and square teeth for most jobs. Clearance ground and heat-treated to combine longest wear life with maximum toughness. Supplied in Simonds own steel — High Speed, Si-Maloy (Pat.), or Semi-High Speed.

Other High Quality SIMONDS Metalworking Products

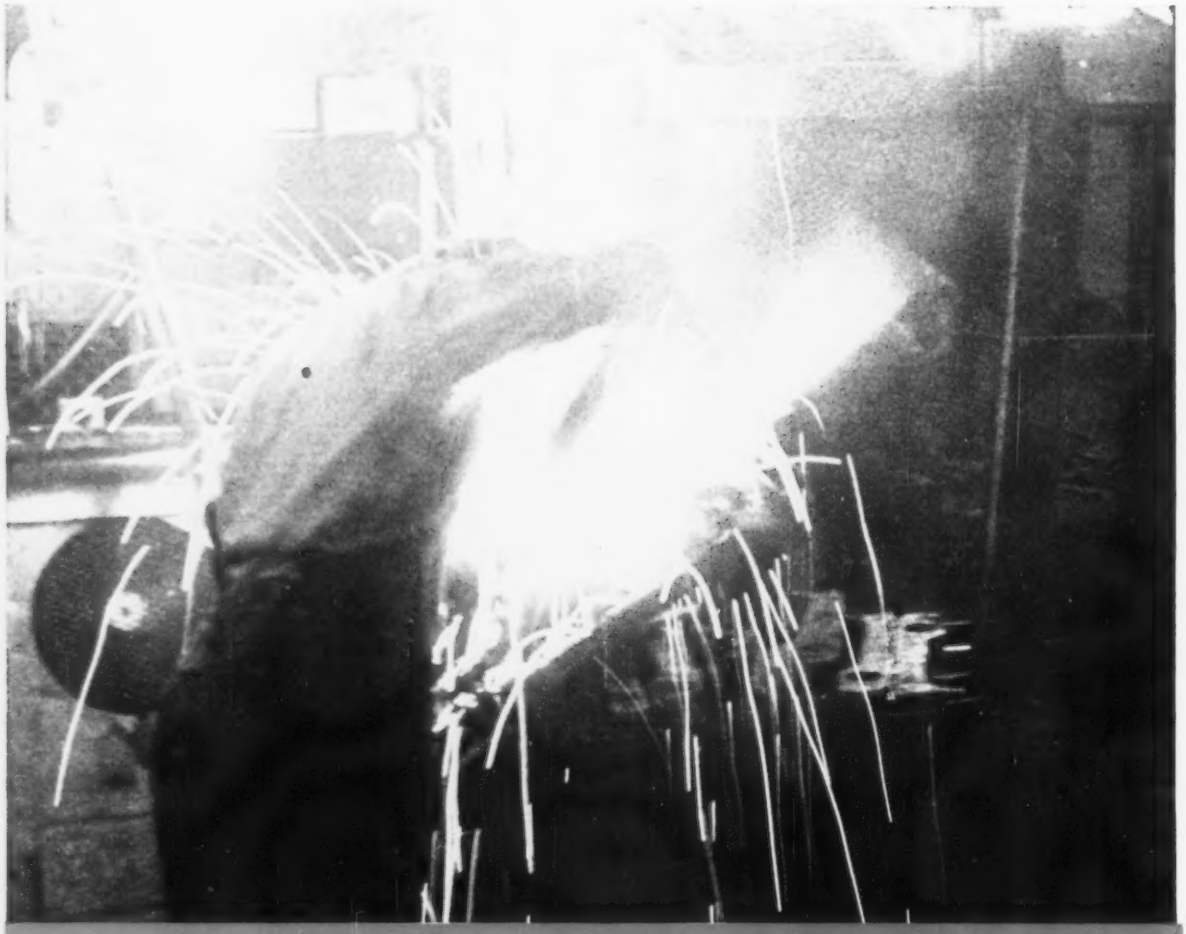
125 YEARS OF GROWTH • 1832-1957

SIMONDS SAW AND STEEL CO.

FITCHBURG, MASS.

For Fast Service from Complete Stocks Call your SIMONDS Industrial Supply DISTRIBUTOR

Factory Branches in Boston, Chicago, San Francisco and Portland, Oregon
Canadian Factory in Montreal, Que. • Simonds Divisions: Simonds Steel Mill, Lockport, N. Y.
Simonds Abrasive Co., Phila., Pa., and Arvida, Que., Canada • Heller Tool Co., Newcomerstown, Ohio



Houghto-Safe Needed Here

Let a leaking lift truck leave a pool of oil here. Let a pressure line break. Let a reservoir run over. Let just a welding spark go astray where hydraulic oil is free and . . .

Whoosh! You've got trouble on your hands.

We see it in the papers almost every day. People are still finding out about hydraulic fire hazards the hard way. Industry today is more safety conscious than ever before, yet you'll still find people who shake their heads with amazement when they hear the facts about hydraulic fire danger.

Under no more than normal working pressures, hydraulic fluid has sprayed as much as 75 feet—to touch off disastrous fires. Any piece of hydraulic machinery that ever comes this close to high temperature hazards—no matter how briefly or how seldom—can be a potential flamethrower.

But hydraulic fires need never happen. No matter what the hydraulic application, there's a Houghton Houghto-Safe fluid that will provide top-grade efficiency with complete fire safety. Ask your Houghton man.

HOUGHTO-SAFE

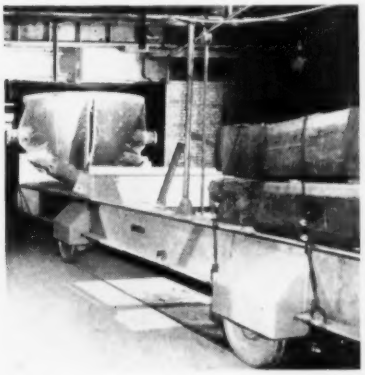
. . . a product of

E. F. HOUGHTON & CO.

PHILADELPHIA · CHICAGO · DETROIT · SAN FRANCISCO

Ready to give you on-the-job service . . .

Steel Co.'s new 600-ton open hearth furnace. Traveling on rails between the checkers under the furnace, the counter-weighted cars carry 11-ft



diam slag pots. When full these weigh in excess of 61 tons.

Built by Blaw-Knox Co., Pittsburgh, the cars are the largest weldments ever fabricated at the company's equipment division. Each car weighs 19 tons and is powered by a 13½-hp motor, operated by remote control.

Cut Weight, Keep Strength

When you can cut seven and a half tons off the weight of an offshore drilling mast without sacrificing strength, you've gone a long way in reducing costs.

That's just what a leading manufacturer of drilling masts and derricks has achieved in a new mast announced by Lee C. Moore Corp., Tulsa.

Engineers of the Moore firm used "U.S.S. Man-Ten," one of the top high-strength steels, for savings in weight. Developed by the United States Steel Corp., the steel was supplied by its Tennessee Coal and Iron Div. through the office of Henry S. Hill, Oklahoma district sales manager at Tulsa.

Portable Unit—The new mast, a portable unit, is designed to offer

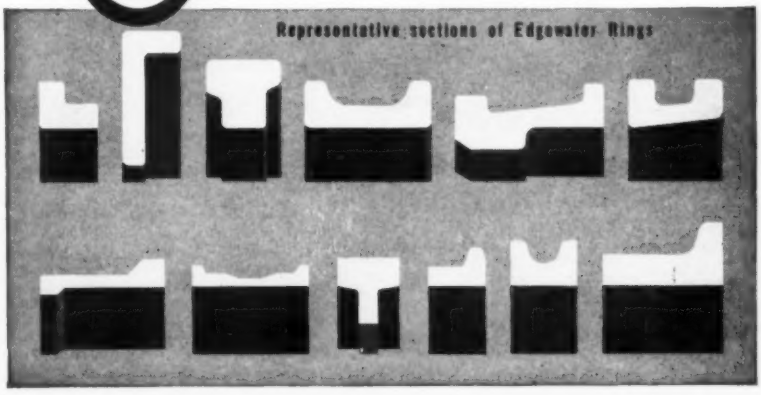
accurately formed
WELDED or WELDLESS
Edgewater Rings

save critical materials . . .
reduce costly machining . . .
meet highest quality standards

Your most critical specifications can be met by Edgewater Steel Rings—welded or weldless as required by the service. Formed accurately by modern methods, they are close to finish size as rolled. Weldless rings are rolled from solid steel blocks, in diameters from 5 to 145 inches. Welded rings up to 48 inches in diameter are formed from bars extruded or rolled to shape. Both types can be made in a great variety of sizes and cross-section shapes, as shown below. Being accurate in size and cross-section, Edgewater Rings save costly material and machining time.

Edgewater Steel Company
P. O. Box 478 • Pittsburgh 30, Penna.

Representative sections of Edgewater Rings



what's in a name?

To these proud parents there's only one "Johnny"!

In the field of metal abrasives, there's only one "MALLEABRASIVE", and that's our baby!

"MALLEABRASIVE" is the name of the world's first malleablized abrasive, researched and developed by Globe and famous Battelle Memorial Institute.

No other metal abrasive is the same because only Globe uses the complete process which gives Malleabrasive its own distinctive metallurgical structure.

What's in a name? Just this — the name MALLEABRASIVE represents a standard of excellence that prompts Malleabrasive users to ask, "Is it as good as Malleabrasive?" when urged to buy something similar.

Sold by Pangborn Corporation, and by leading distributors of foundry supplies from coast to coast.

MALLEABRASIVE

THE GLOBE STEEL ABRASIVE CO., MANSFIELD, OHIO ®

1907—Fiftieth Anniversary—1957

TECHNICAL BRIEFS

lighter weight and easier handling in one of the heaviest and most cumbersome items of oil field equipment. Wherever this can be accomplished it spells dollars and cents to the offshore driller.

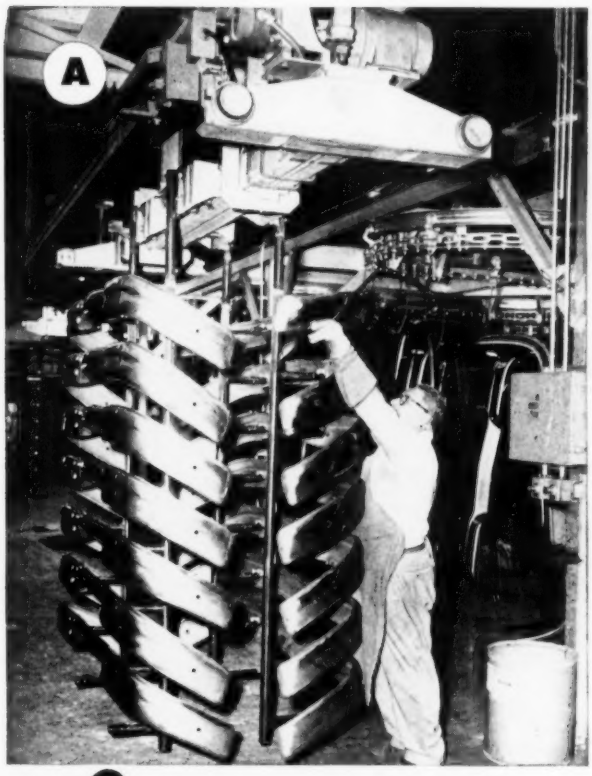
The new unit was delivered to the Coral Drilling Co., New Orleans, and has gone into service in the Gulf of Mexico aboard the firm's "Mr. Arthur."

"U.S.S. Man-Ten," one of the earlier of the steel industry's high strength steels, was developed by U. S. Steel before World War II. In fact, Moore engineers have been putting it to use in portable drilling masts and derricks for some 20 years.

They came up with a 140-ft portable steel mast capable of handling the requirements of the deepest current offshore drilling. Yet, by placing "U.S.S. Man-Ten Steel" at points of greatest stress, which figured out to approximately 34 pct of the total steel, they cut the total weight by about 15,000 lb over that of a similar size and strength mast using carbon steel entirely.

Shipping Costs Less — The lighter a mast can be for the job required, the less the cost of transporting it to the platform or barge on which it will serve. In a related sense, on portable drilling rigs going to destination by truck, the savings of weight in the new Moore model sometimes can be the difference that allows the trucker to meet state weight regulations.

Stability was the feature that determined the design of the new mast. While it can be readily broken down into sections for transport by truck, it assembles quickly and easily into a sturdy unit aboard barge that can be raised or lowered in a matter of minutes as a single unit. Thus it need not be broken down when necessary to lower it to clear a bridge or lessen damage during a hurricane or reduce wind resistance during barge movement.



AMERICAN MONORAIL

teams with *Udylite*

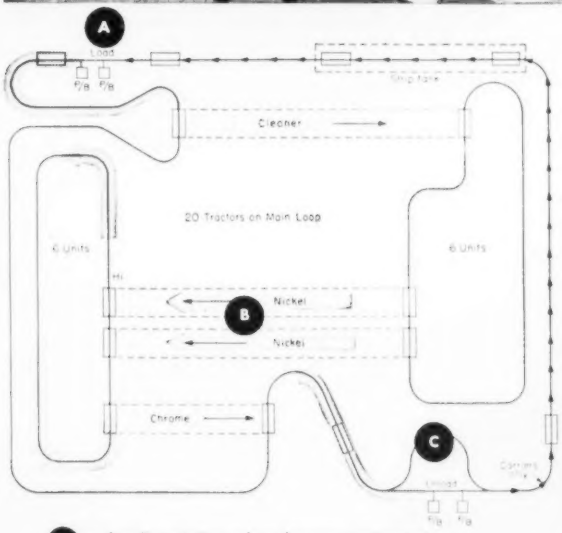
plates auto bumpers at Rheem Automotive plant

Combined engineering skills resulted in substantially reduced handling costs for the plating of auto bumpers at the new Rheem Automotive plant at Fullerton, California.

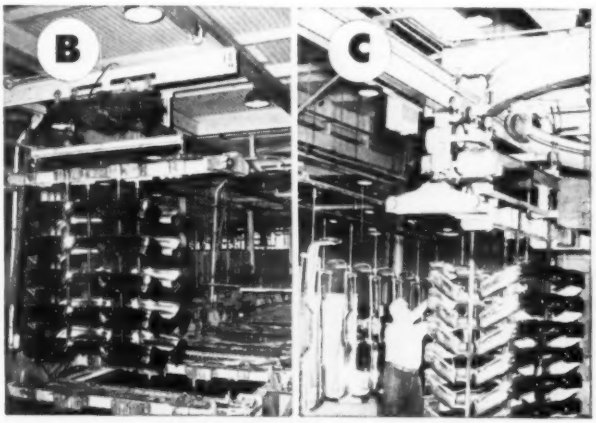
32 American MonoRail automatic dispatch units move special Udylite bumper carriers on three monorail systems with 14 drop sections to maintain continuous automatic plating.

Let American MonoRail engineers combine to solve your handling problems.

Write for Bulletin C-1.



A — Loading station where bumpers enter system.
B — Bumpers move through nickel tanks.
C — Inspection and unloading station.



Member of Materials Handling Institute and Monorail Manufacturers Association

For Power Driven Conveyors, Use Landahl Chainless Conveyors

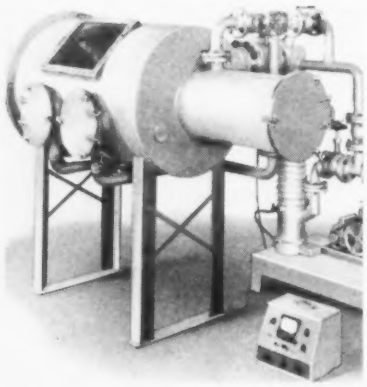
AMERICAN MONORAIL COMPANY

OVERHEAD HANDLING EQUIPMENT

13103 ATHENS AVENUE, CLEVELAND 7, OHIO (IN CANADA—CANADIAN MONORAIL CO., LTD., GALT, ONT.)

New Production Ideas

Equipment, Methods and Services



Vacuum Chambers Aid Welding, Metals Research

For welding and metallurigcal research use, this controlled-atmosphere vacuum chamber is capable of ultimate vacuums of better than 10^{-5}mm Hg. It comes in both standard "package" or specialized designs. The producer recommends the chambers for research and production welding, casting, and metallurgical research on metals and alloys like titanium, zirconium, zircalloy-2, hafnium, molybdenum, etc. Typical of the "package" units is a model with a 32-cu-ft tank capacity. Its tank and end bells are of stainless steel. Clear inside dimensions are 29⅞-in. diam by 54½-in. long. Glove and view ports are on each side. This particular unit is shipped complete with a vacuum pump and control console, welding power source, and welding jigs and fixtures. (L & B Welding Equipment, Inc.)

For more data circle No. 40 on postcard, p. 113

Setup Shreds Wipers, Waste Paper, Boxes

Plants and shops throwing away large volumes of paper daily can now make use of this machine. It shreds heavy, light, in-between paper with equal ease. Into it goes anything that belongs in a paper bale, and out comes crushed, shredded material for easy baling. The unit gobbles-up cardboard cartons, paper wipers, boxes, containers, etc. with no preliminary preparation. Collapsing boxes beforehand is unnecessary. As a result, it takes less time to reduce waste materials to shreds. The shredder can be hooked up to a baler or a pneumatic or conveyor system. Big "wastebasket" piles needn't be brought to the machine either. Instead, the unit moves on casters to the waste. It has floor brakes which hold it while paper gets shoveled in. Easily pushed aside after use, it takes 68 x 97-in. floor space. (Industrial Shredder & Cutter Co.)

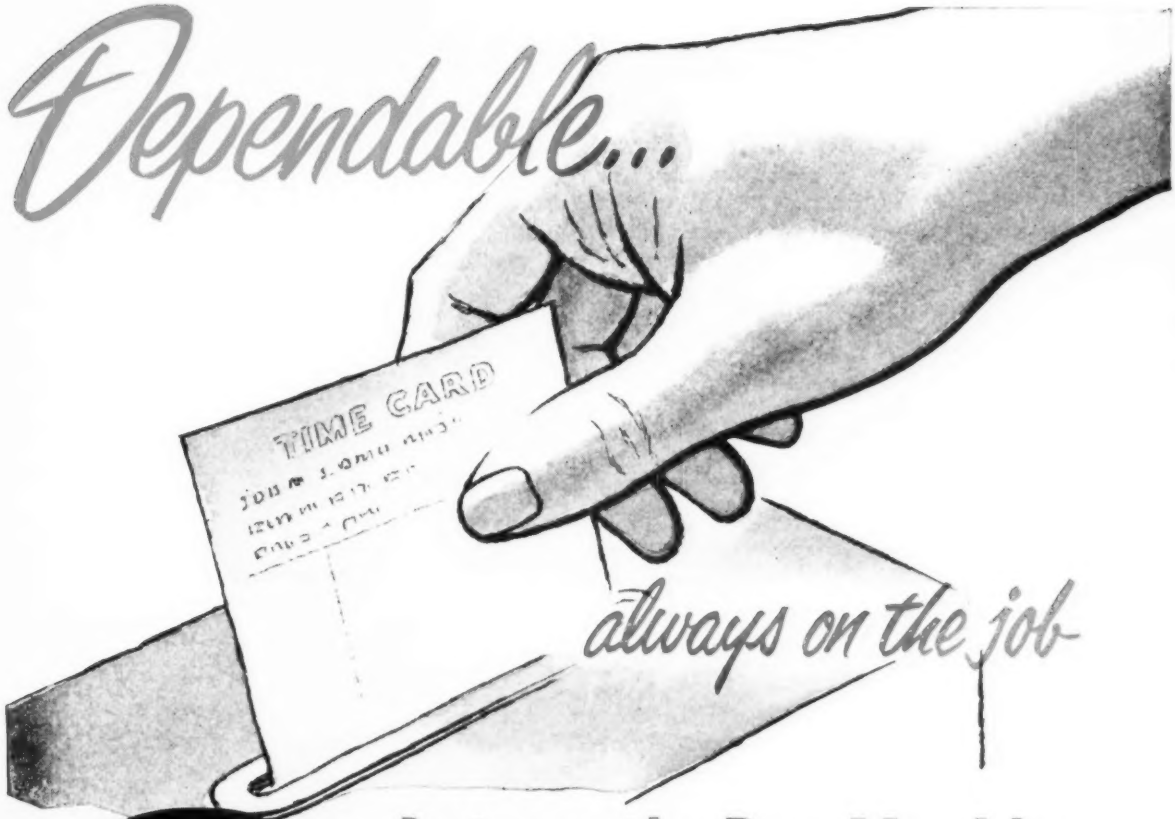
For more data circle No. 41 on postcard, p. 113

One-ton Truck Has 1½-yd Capacity Dump Body

If you have a small-truck budget and big-truck problems, maybe this is your answer. It's not a big truck that sells for the price of a small model; rather it's a one-ton chassis mounted with a 1½-cu-yd capacity dump body. Thus, it offers some of the carrying advantages of relatively larger trucks. Ideal for handling raw materials and waste, the unit's hydraulic hoist is the single-cylinder, telescopic head-lift type, with a 61-in stroke. Its high-pressure cylinder has V-type packing and a 5-ton capacity. The pump reservoir and valve are in a single unit, driven by power take-off from the truck transmission. The body itself is made of 12-gage steel; it has gussets for adding sideboards if needed. It's 8-ft long. Formed steel crossmembers and structural longitudinals give full support to the entire floor area. (The Anthony Co.)

For more data circle No. 42 on postcard, p. 113

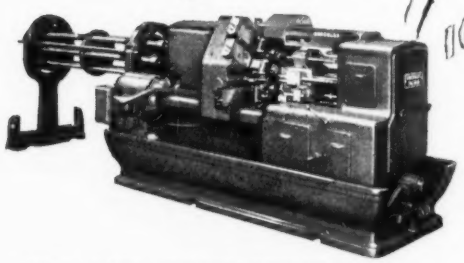
Dependable...



always on the job

PRODUCTION MACHINERY

GREENLEE Automatic Bar Machines



SIX AND FOUR-SPINDLE AUTOMATIC BAR MACHINES

GREENLEE Special Machine Tools

- Multiple-Spindle Drilling and Tapping Machines
- Transfer-Type Processing Machines
- Hydro-Borer Precision Boring Machines

BOOST PRODUCTION REDUCE DOWN TIME

It's easy to maintain rigid production schedules . . . prevent costly bottlenecks with Greenlee Bar Automatics. They are always on the job . . . give continuous, reliable service.

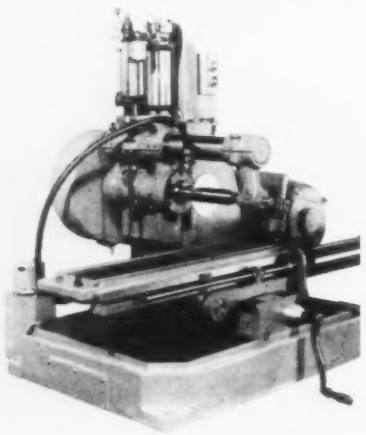
You hear much comment about Greenlees' uninterrupted, round-the-clock performance in widely different industries. With good reason, too, for Greenlee offers years of manufacturing experience... plus manufacturing integrity not often duplicated.

Want complete information? Call in the Greenlee man. Let him give you the complete story. Please submit a print when inquiring about a specific job.

WRITE FOR CATALOG No. A-405

GREENLEE BROS. & CO.

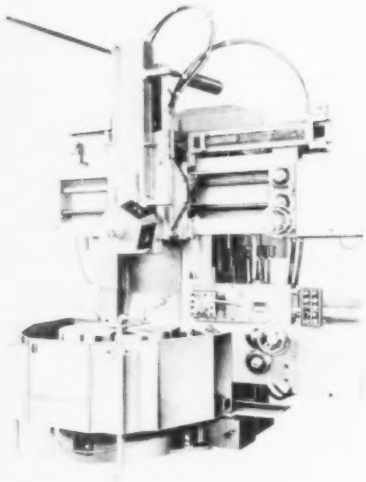
1808 MASON AVENUE
ROCKFORD, ILLINOIS



Production Or Toolroom Half-Mill Is Compact

Both compact and flexible, this half-mill can serve both toolroom and production applications. Uses of this machine tool range from employing it as an independent head mounted on any base to that of semi-automatic machining with air-hydraulic head and table feeds. Slotting, sawing, face milling, keyway cutting, slab milling, boring and other operations are normal jobs for this milling machine. The half-mill, powered by a 1 or 2-hp motor, has rack and pinion hand feed. For toolroom and light horizontal boring setups, it can be equipped with a micrometer depth stop, screw manual head feed, and a longitudinal screw feed table. Combination of 18-in. stroke air-hydraulic table feed and 4-in. stroke head feed turns the half-mill into semi-automatic production equipment. For use with carbide or ceramic tooling, it comes with a high speed head and motor. (U.S. Burke Machine Tool Div.)

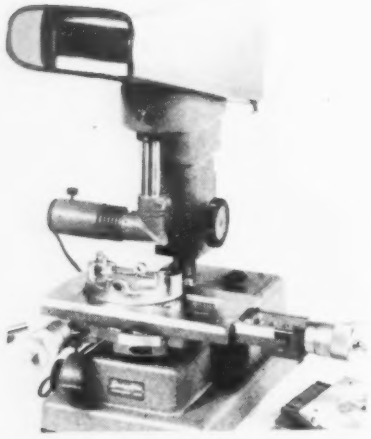
For more data circle No. 43 on postcard, p. 113



Boring Mill Features Automatic Feed Stops

This 36-in. boring and turning machine features automatic feed stops. An optional item from the maker, these stops provide for vertical and horizontal feed control of all heads. For a standard, five-position turret head, one vertical and one horizontal adjustable stop take care of each of the five turret faces. Electrically controlled, the boring mill has its controls conveniently located for the operator. Two horsepowers are provided: 40 and 50-hp. Two other models with 40 and 50 hp are also available. These are 30 and 46-in. size machines. On 56-in. sizes and up, they're 75 and 100 hp. The boring mill has 24 feeds from 0.0016 to 0.250 per table revolution; 24 speeds come in any one of three standard ranges: low, intermediate, or high. Both feed and speed selection are pre-selective from direct reading dials. In addition to automatic stops, other optional features include: automatic tracing control of heads, automatic cycling, power indexing of turrets. (King Machine Tool Div., American Steel Foundries.)

For more data circle No. 44 on postcard, p. 113



Projector Unit Allows Precision Measuring

Engineering, production or toolroom measuring operations are carried out with precision accuracy with this projector. The new instrument is portable and ruggedly built for stability under shop conditions. It performs a wide range of inspection jobs. Its maker recommends the projector for checking: circular form and single point tools; drill, tap, reamer setups; screw-machine parts; gap-setting and other micro adjustments; silicon and germanium wafer inspections; gear tooth forms; thread forms; stamped, formed or machined parts, etc. Small tools and parts can be examined by sub-stage and surface illumination, showing clearly both contour and surface details. Instead of a monocular eyepiece or ground glass, the projector uses an opaque photometric white 6 x 6-in. square screen situated at the rear of the instrument hood. Magnified, parallax-free images are shielded from light and reflections. (Stocker & Yale, Inc.)

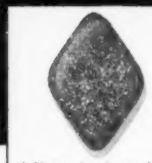
For more data circle No. 45 on postcard, p. 113

it's the SHAPE that counts!

ALL NEW... Speed-D-Burretts*

Controlled Size and Shape

ABRASIVE MEDIA for PRECISION BARREL FINISHING



4 Shapes to choose from

Outlasts other media as much as 10 to 1

Controlled grain size Aluminum Oxide bonded firmly with specially formulated synthetic rubber to allow finishing of precision parts hitherto impossible to barrel finish. Molded and cured to controlled hardness that assures long life, maximum cushioning yet gives desired cutting, honing or polishing action. May be used with any equipment.

New "Burretts" permit abrasive action in the most remote corners and recesses of delicate, precision parts. Will not chip or splinter into odd shapes that lodge in blind or threaded holes. Prevents broken chip damage to expensive parts.

Write for catalog of prices, sizes, shapes and grits—today!

*Pat. Pend.

SPEED-D-BURR CORPORATION — PRECISION BARREL FINISHING — DESIGNERS • ENGINEERS • MANUFACTURERS

THE WORLD'S MOST COMPLETE LINE OF PRECISION BARREL FINISHING EQUIPMENT & SUPPLIES

Write for catalogs on:

FUTURAMA LINE - MITY-MITE LINE - SPACE-MISER MEDIA AND COMPOUNDS - HANDLING EQUIPMENT

Service is our most important product. Use it!

SPEED-D-BURR CORPORATION

3613-e San Fernando Road, Glendale 4, Calif.

PERFORATIONS

UP TO ½" IN STEEL 60" WIDE

The most productive and modern perforating equipment in the world is at your service when you deal with Accurate. This means lowest cost—precision perforating. Versatile Accurate Perforating has hundreds of dies ready for service—and is equipped to develop unlimited patterns. Let us help you solve your perforating problems. Write for our FREE catalog #6.

SERVING THESE INDUSTRIES:

AIRCRAFT • AUTOMOTIVE • BUILDING CONSTRUCTION • COMMUNICATIONS • ELECTRICAL EQUIPMENT • FOOD PROCESSING • HEATING • MINING • RADIO AND RADAR • RAILROADS • SHIP BUILDING • STEEL •

IN THESE MATERIALS:

ALUMINUM • BRASS • BRONZE • COPPER • LEAD • MONEL METAL • STEEL • STAINLESS STEEL • MASONITE • PLYWOOD • PAPER • CLOTH

ACCURATE
perforating company

3632 SOUTH KEDZIE AVENUE • CHICAGO 32, ILLINOIS

New data tells how

STUPALOX *oxide cutting tools*
cut costs...
speed production!

Now at last! In a handy, well-organized booklet for easy reference—facts, figures and other technical data on the complete line of Stupalox oxide cutting tools and holders.

The amazing performance of these tools—developed by Stupakoff engineers—has established new highs in production and profits for users. They have brought about a new era in cutting tool performance. Faster speeds, deeper cuts, smoother finishes, and longer tool life add up to greater over-all economy. Even capital investment can be lowered, since production levels can be maintained with fewer machines and floor space released for other uses.

This new booklet contains all of this valuable information on one of the most exciting developments in the machine and tool industry during recent years. For your free copy, fill out and mail the coupon below.

STUPAKOFF DIVISION OF
The CARBORUNDUM Company

WRITE DEPT. IA LATROBE, PENNSYLVANIA

SEND for your FREE copy TODAY!

Stupakoff Division of
The Carborundum Company
Latrobe, Pennsylvania

Please send me a free copy of Bulletin 257, STUPALOX OXIDE CUTTING TOOLS

NAME _____ TITLE _____

STREET _____

CITY _____ STATE _____

Steam Cleaners Tackle Big, Medium, Small Jobs

Three new direct-fired steam cleaners cover a broad range of capacities. The smallest model tackles light to medium jobs; its output is 120 gallons per hour. A medium size unit handles medium to heavy duty work with a 200-gph output. For big jobs, a large-capacity 300-gph output steam cleaner fills the bill. Heat of all three models is rated at 320°F. Each of the steam cleaners provides a positive displacement piston pump capable of delivering its full rated output hundreds of feet from the machine. An efficient water-wall heat exchanger offers good heat economy. Gas or oil burners assure instant starting. All three principal components are ruggedly built. This means that maintenance of the units is kept down. Standard equipment on all the cleaners includes a steam-cleaning gun and hose. (Kelite Corp.)

For more data circle No. 46 on postcard, p. 113

Curtiss-Wright Ultrasonic Metal Testing Insures Quality Control

Nondestructive Test Equipment Inspects Critical Alloy Parts for Thompson Products

Under high stress conditions of jet aircraft and engine components, slight inclusions could become defects. To safeguard against flaws in high alloy turbine wheels, Thompson Products Company uses Curtiss-Wright Ultrasonic Test Equipment. High frequency sound waves become unerring flaw detectives.

The Immerscope, basic unit, detects internal flaws and presents them as visual pips on the cathode ray tube. The Dual Channel Flaw Calibrator (shown above) indicates the size of the flaw. It also provides two additional flaw alarm channels which allow a differentiation between size and type of flaw.

By console controlled manipulation, intricate shapes and surfaces may be inspected. Defects can also be recorded for immediate correction or reference.

Standard ultrasonic testing and immersion units and automatic inspection installations tailored to your applications insure great savings in machining time and quality control. Curtiss-Wright engineers are available to give prompt consideration to your problems.

CANADIAN REPRESENTATIVE:
CURTISS-WRIGHT OF CANADA, LIMITED,
MONTREAL

INDUSTRIAL AND SCIENTIFIC PRODUCTS DIVISION
CURTISS-WRIGHT
CORPORATION • CALDWELL, N. J.

Furnace Chargers

Of all-hydraulic design, a new line of furnace charging machines come in eight sizes. These range from 2000 to 20,000-lb capacities. The machines use dies, gasoline or propane engines or plant electricity as a primary power source. They have boxes for charging scrap, limestone and other loose materials into melting furnaces. However, units also are furnished with various designs of tongs to handle ingots, billets, blooms, slabs and other solid forms. (Salem Brosius, Inc.)

For more data circle No. 47 on postcard, p. 113

Drill Countersink

Replaceable at one-half the cost of a conventional double ended center drill of the same size is this replaceable, stub taper drill-countersink. It is recommended for vertical and horizontal boring mills, jig bores, drill presses; in conjunction

with fixtures utilizing bushings to guide the adaptors for spotting holes and centering parts. (Unidapt Co.)

For more data circle No. 48 on postcard, p. 113

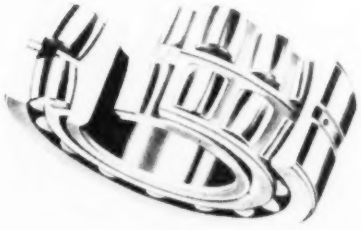
Lifting Magnets

Of all-welded construction, two new large diameter bolted lifting magnets permit field replacement of worn pole shoes and similar "do it yourself" tasks associated with normal magnet repair. These 57- and 66-in. diam magnets employ coils wound with strap aluminum conductor on a mica- and ecamica-insulated spool. Radial clamps hold

the coil windings against movement on the spool. The completely wound spool is held in the magnet case by continuous beaded welds to provide a water-tight seal. These welds can be ground or chipped off by an air hammer for ready field removal of the spool and coil. Coil leads are on opposite sides of the magnet and terminate in separate chambers 180° apart. (Square D Co.)

For more data circle No. 49 on postcard, p. 113

Bearing

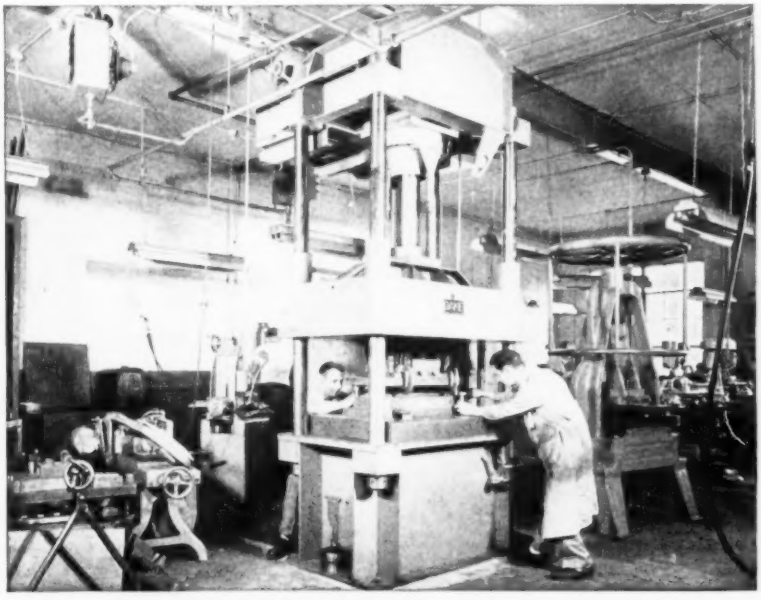


Spherical roller bearings from one producer feature long life due to a special lubrication innovation. The new design introduces the lubricant through a fitting in the center of the housing cap. From there it moves along a groove around the circumference of the outer ring. Equally spaced holes in the ring permit the lubricant to enter the center of the bearing—and move outward — completely covering all working surfaces of the bearing. Because the flow path is from the center to the edges of the bearing, the old lubricant is automatically flushed away from the bearing and carries with it any abrasive dust, dirt, moisture, or other impurities. (Berry Bearing Co.)

For more data circle No. 50 on postcard, p. 113

Shaft-Mount Drives

Shaft mounted drives by one maker have a high ratio of 24 to 1 (or 20 to 1 in two smaller sizes). These all-steel, double reduction



The diemaker who made a nuisance of himself

This is the story of Three Star Manufacturing Co.—a custom diemaker who serves a number of manufacturing plants in Chicago.

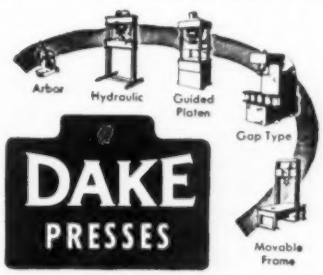
As in most such shops, his only means of trying out dies was a hand power screw press which sometimes needed six or seven men to get the needed pressure.

Large dies had to be tried out on his customers' production presses . . . which required drayage ($15 to $20 each way) and interruption of his customers' production. It meant both expense and nuisance to his customers and himself every time a die had to be tested.

Now he has ended the nuisance by installing the press shown above in his own shop. It not only saves time and money, but avoids the embarrassment of having workers in his customers' plants see and know that occasionally a die must be taken back for adjustment.

Specifications for Dake single-acting and double-acting die tryout presses in eighteen electrically operated models are contained in Bulletin 330. Write today for your copy!

DAKE CORPORATION, 602 Seventh St., Grand Haven, Mich.



Send for Big New Catalog

DAKE CORPORATION
602 Seventh St., Grand Haven, Mich.
Please send me a copy of Dake Bulletin 330
Name_____
Company_____
Address_____
City_____ Zone____ State_____

ACME
Screws & Nuts

BY H&R
The Threading Specialists

You'll be dollars ahead to depend on reliable, low-cost Acme screws and nuts for power screws, jacking devices, position controls, etc.

H & R's 20 years of specialized experience and exclusive Acme tooling gets your designs into production fast at lowest cost. Write, wire or phone now for prompt quotations.

HORSPOOL & ROMINE
MANUFACTURING CO., INC.
5850 MARSHALL STREET
OAKLAND 8, CALIF.
Phone OLympic 2-1844

26

drives save on motor costs, says the manufacturer, since with lower output speed, a 1750-rpm motor can do the work of a more expensive, slower speed motor. Units come in ½ to 30-hp ranges, with output speeds as low as 5 rpm. (The Falk Corp.)

For more data circle No. 51 on postcard, p. 113

Electronic Battery

Designed to replace storage battery and floater combinations where stability, low noise and transient requirements are severe is a new electronic battery. Input is 105-125/210-250-volts, 50/60 cps. Output is 6-v adjustable ±5-pct, 0-5-amp; 2-v adjustable ±5-pct, 0-100 milliamperes. It's intended for use in spectrophotometers, sensitive dc amplifiers and other similar electronic instruments where the requirements demand such rigid electrical operating specifications. (American Electronic Laboratories, Inc.)

For more data circle No. 52 on postcard, p. 113

Steel Weight Finder

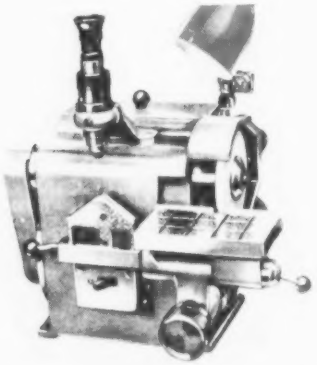
This steel weight finding gage gives direct readings in pounds per foot or pounds per square foot of steel bars, pipe and sheets. It's supposed to take the place of reference books and charts usually required in steel purchasing and estimating. The

finder doesn't use the "scale" system which requires estimation. Instead, says its maker, it gives weights in numbers to three or four decimal place accuracy. Four movable dials on it give direct readings for over 1000 items. (Alcott Calculator Co.)

For more data circle No. 53 on postcard, p. 113

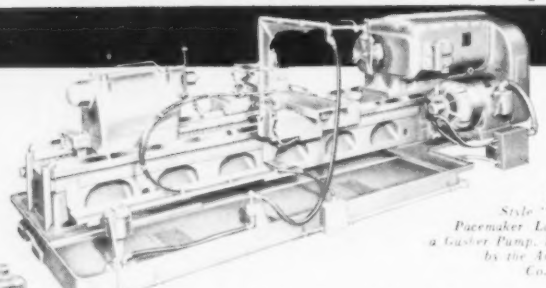
Drill Sharpener

Why waste a skilled worker's time sharpening drills when an unskilled man can do the job just as good? Such a question is asked by a



maker of a new drill grinding machine. This unit works so simply that a highly skilled employe on it is unnecessary. It sharpens drills 0.012 to 0.120 in. An operator merely

LOW IN COST
HIGH IN QUALITY
Ruthman GUSHER Coolant Pumps



Illustrated is a 32" Style "A" De Luxe Model Pacemaker Lathe equipped with a Gusher Pump. Lathe manufactured by the American Tool Works Co., Cincinnati, Ohio.

Type 9050

Expertly designed and precision built of the best materials, by the originators of this type pump. Gusher Pumps give you high quality at reasonable cost. The wide acceptance of Gusher Pumps by the metal cutting industry is your assurance of their efficiency in operation, low maintenance cost, and long trouble-free life.

Write today for catalog

Ruthman MACHINERY CO.

- COOLANT PUMPS
- CIRCULATORS • AGITATORS
- MOLTEN METAL PUMPS

1809-1823 Reading Rd., Cincinnati 2, Ohio

METAL STAMPING FACILITIES

by Lansing

at your Service for...

TRANSPORTATION EQUIPMENT

HOUSEHOLD APPLIANCES

ELECTRICAL EQUIPMENT

INDUSTRIAL EQUIPMENT

FARM IMPLEMENTS

Lansing Stamping Co.

ESTABLISHED 1914

LANSING 2 MICHIGAN

WARD STEEL CO.

PROMPT WAREHOUSE SERVICE ONLY

Most Complete Stock in America of

BLUE TEMPERED SPRING STEEL

We believe that the way to sell is to carry a stock which permits satisfying any reasonable warehouse demand

878 Rindge Ave. Ext. Phone UN 4-2460

CAMBRIDGE 40, MASS.

Branch

3042-3058 W. 51st Street, CHICAGO, ILL.

Phone: Grovehill 6-2600

clamps a drill into a holder. The holder's special shape assures absolute symmetrical sharpenings regardless of the predetermined tip angle, backing off angle or whether it is a right or left hand drill. (Jersey Mfg. Co.)

For more data circle No. 54 on postcard, p. 113

Screwdrivers

Thanks to a new grip material, these screwdrivers won't slip, nor will they hurt the hand of their user. Featuring a neoprene rubber grip permanently bonded to a tough amberlite handle, the tools offer a

cushion handle unaffected by water, oil or gasoline. It never hurts the hand, no matter how hard it's gripped, its maker points out. The handle doesn't slip, even when wet or oily. It is completely shockproof. In all, there are 16 sizes from 3 to 12 in. (Bridgeport Hardware Mfg. Corp.)

For more data circle No. 55 on postcard, p. 113

Safety Signs

Point the way to safety with these signs that glow in total darkness. They aren't "reflective" signs that need a source of light to be visible, though. Because of a special phosphorescent pigment used, a short exposure to light — daylight or artificial—makes them glow visibly for hours. Possible uses: to identify emergency exits, first aid kits, safety switches, emergency controls, shelter areas, high voltage lines, etc. (M-M-A, Inc.)

For more data circle No. 56 on postcard, p. 113

Thirty Million B.T.U. CAPACITY

NIAGARA Aero HEAT EXCHANGER

. . . Cooling in Chemical Processes with Precise Control of Temperature

The NIAGARA Aero HEAT EXCHANGER cools liquids and gases by evaporative cooling with atmospheric air, removing the heat at the rate of input, controlling temperature precisely. You save 95% of cost of cooling water; you make great savings in pumping, piping, power; quickly recover your installation cost.

You can cool and hold accurately the temperature of all fluids, air and gases, water, oils, solutions, chemical intermediates, coolants for mechanical, electrical and thermal processes. You obtain closed system cooling free from dirt. You solve all the problems of water availability, quality or temperature.

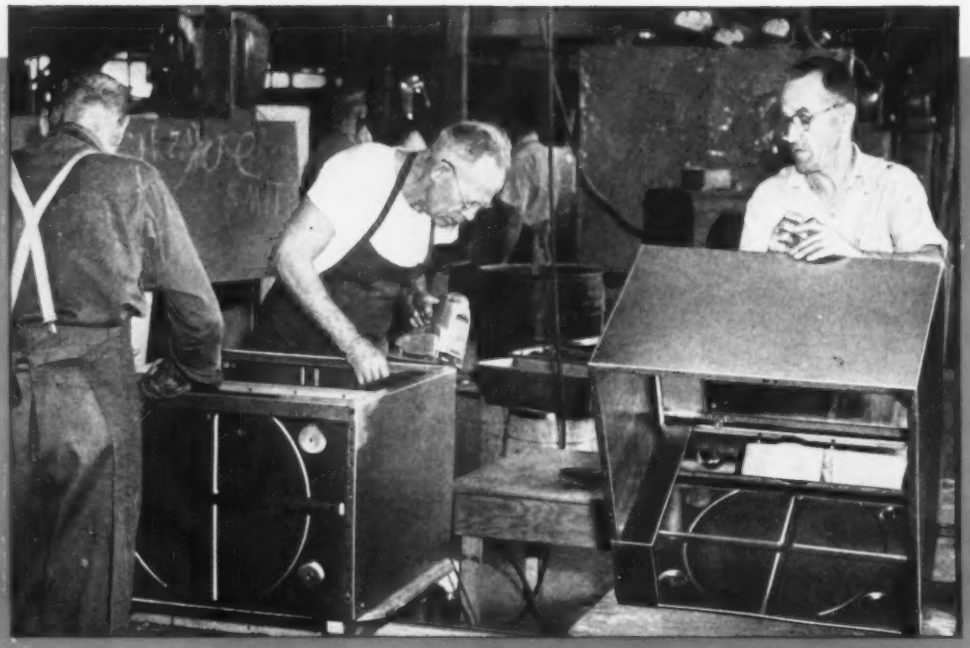
In CHEMICAL PROCESSES this is successfully used in cooling liquids and gases, chemical reactions, condensing distillations and reflux cooling.

Write for complete information; ask for Bulletins 120 and 124. Address Dept. IA-8-2.

NIAGARA BLOWER COMPANY

405 Lexington Ave., New York 17, N.Y.

District Engineers in Principal Cities of U. S. and Canada



Why RED LION Cabinet Company uses A.W. Cold Rolled Steel

Red Lion Cabinet Company requires quality cold rolled sheet to meet the high standards set for the company's end product.

- Alan Wood's strict metallurgical control assures maximum quality—rejects are reduced, providing more cabinets per ton of steel—less production line hold up.
- Alan Wood cold rolled sheet has a good clean surface, resulting in a superior cabinet finish.
- Alan Wood cold rolled sheet forms easily.

Qualities like these are the direct result of close control in Alan Wood's modern mills.

Alan Wood cold rolled steel may also help you improve profits. Write Marketing Division, Department CR-S64 for full information.

ALAN WOOD STEEL COMPANY

steelmasters for more than a century and a quarter • CONSHOHOCKEN, PA.

DISTRICT OFFICES AND REPRESENTATIVES: Philadelphia
New York • Los Angeles • Atlanta • Boston • Buffalo • Cincinnati
Cleveland • Detroit • Houston • Pittsburgh • Richmond • St. Paul
San Francisco • Seattle
Montreal and Toronto, Canada—A. C. Leslie & Co., Limited

IRON PRODUCTS
"Swede" *pig iron*

STEEL PRODUCTS
Plates (sheared)
A.W. Dynalloy (high strength steel)
Hot rolled sheets
Hot rolled strip
Cold rolled sheets
Cold rolled strip

ROLLED STEEL FLOOR PLATE
A.W. ALGRIP *abrasive*
A.W. SUPER-DIAMOND *pattern*

COAL CHEMICALS

A.W. CUT NAILS
Standard & Hardened

MINE PRODUCTS
Iron ore concentrates
Iron powder
Crushed stone
Sand

COKE
Foundry, industrial & metallurgical

PENCO METAL PRODUCTS DIVISION
Steel cabinets, lockers & shelving

The Iron Age Summary

Why Steel Looks For Fall Surge

Sluggish appearance of market is deceptive. Steel men note signs of coming pickup.

Plate mill carryovers are on the increase in some areas. Structural and plate quotas tighten.

■ The gathering strength of the steel market is more of a "feel" than an actuality for the moment. On the surface, the market is dawdling along at a snail's pace. Except for structurals, plate, and oil country goods, demand is sluggish. But a look behind the scenes reveals why steel men are looking for an upturn in the near future.

Here's why the market will begin to perk up in the next several weeks: (1) Automotive steel inventories are at low ebb, will need replenishing soon; (2) metalworking purchasing agents are eyeing steel stocks in the light of a probable business upturn after Labor Day, and (3) plant vacation shutdowns have about passed the summer peak, which means a renewed spurt in steel consumption.

Automotive Outlook—The competitive race among the automotive Big Three assures a continuing strong demand for steel once new model production gets underway. Ford and Chrysler will be fighting to hold onto sales gains, while General Motors will be pushing to regain lost ground. The possibility of an auto strike next year is further assurance of a fast production pace in the months ahead.

Some steel firms are doing better than others in the present market. Mill location is as much responsible for this as better salesmanship. A few mills are stocking up semi-finished steel as a hedge against a sudden upturn in demand later in the year.

Plate Carryovers — Plate mill carryovers are on the increase and already range from two to over six weeks in some areas. Mills which had corrected carryovers earlier now admit they are building up again.

Many steel users are still playing their inventories close to the vest. They hope the market will hold to its relatively easy position at least through third quarter. The tight money market and the increasing cost of borrowing is partly responsible for the low-inventory policies.

Sheet Pickup — The sheet and strip market is growing warmer in the Midwest. Chicago area mills are booking some fourth quarter business. Third quarter order books are about one quarter filled. Warehouse demand for sheets and strip also has improved in the Midwest.

While the shutdown at Great Lakes Steel Corp. has caused some shifting of orders to other mills, no one is suffering. This lost tonnage of sheet and strip may hit some users later, however. The auto companies may have to do some scratching for extra-wide sheets.

Steel Output, Operating Rates

Production	This Week	Last Week	Month Ago	Year Ago
(Net tons, 000 omitted)	2,100	2,048	2,048	2,117
Ingot Index				
(1947-1949=100)	130.7	127.5	127.5	134.2
Operating Rates				
Chicago	83.0	82.0	81.0	87.0
Pittsburgh	82.5	82.0*	83.0	91.0
Philadelphia	93.0	92.0	90.0	77.0
Valley	70.5	72.5*	74.0	73.0
West	102.0	100.0*	99.0	92.0
Buffalo	95.0	95.0	90.0	95.0
Cleveland	90.0	87.0*	78.0	97.5
Detroit	52.0	49.0	84.0	80.0
S. Ohio River	86.0	79.0*	64.0	86.0
South	85.0	85.0	92.0	60.0
Upper Ohio R.	98.0	87.0*	72.0	96.0
St. Louis	84.5	85.0	84.0	102.0
Northeast	37.0	37.0	50.0	55.0
Aggregate	82.0	80.0	80.0	86.0

*Revised

Prices At A Glance

(cents per lb unless otherwise noted)

	This Week	Week Ago	Month Ago	Year Ago
Composite price				
Finished Steel, base	5.967	5.967	5.967	5.622
Pig Iron (Gross ton)	$66.40	$66.40*	$64.95	$63.15
Scrap, No. 1 hvy (Gross ton)	$53.50	$53.83	$54.17	$56.83
Nonferrous				
Aluminum ingot	28.10	28.10	27.10	25.90
Copper, electrolytic	28.50	29.25	29.25	40.00
Lead, St. Louis	13.80	13.80	13.80	15.80
Magnesium ingot	36.00	36.00	36.00	34.50
Nickel, electrolytic	74.00	74.00	74.00	64.50
Tin, Straits, N. Y.	94.375	95.00*	96.00	98.625
Zinc, E. St. Louis	10.00	10.00	10.00	13.50

*Revised

Tool-Die Makers Seek Buyers

Detroit's tool and die builders want to diversify by getting non-automotive orders.

As a result, other customers can be sure of getting red carpet treatment.

■ Buyers of tools or dies will find it to their advantage to place orders now. Not within the past five years have tool and die shops been so anxious to please customers.

Automotive work for 1958 model cars has in nearly all cases been completed and only a little work has been released for 1959 models. Shops do not expect to be bustling until automakers start buying again. Recent cutbacks in military programs, particularly aircraft, have further lightened backlogs. So customers entering the shop doors now can expect red carpet service.

Backlogs Down — Machine tool builders have seen backlogs of work orders fall to 4 months—half the level of a year or so ago. In Detroit they are interested in diversifying by attracting non-automotive accounts. They have a lot to offer to the customer who can place orders at times that fall between the auto business.

One manufacturer said more facilities are available today to do a better job at a better price than in the last 7 to 8 years. Customers will get more attention, consequently better tools. Competition will hold the price down.

Detroit machine builders have extensive experience in engineering special equipment as well as production tools. Facilities are at hand to handle almost any special requirement in manufacturing the finished tool—from heat treating to air cooling of metals.

If a customer finds one shop is unable to manufacture the tool he needs, another one can do.

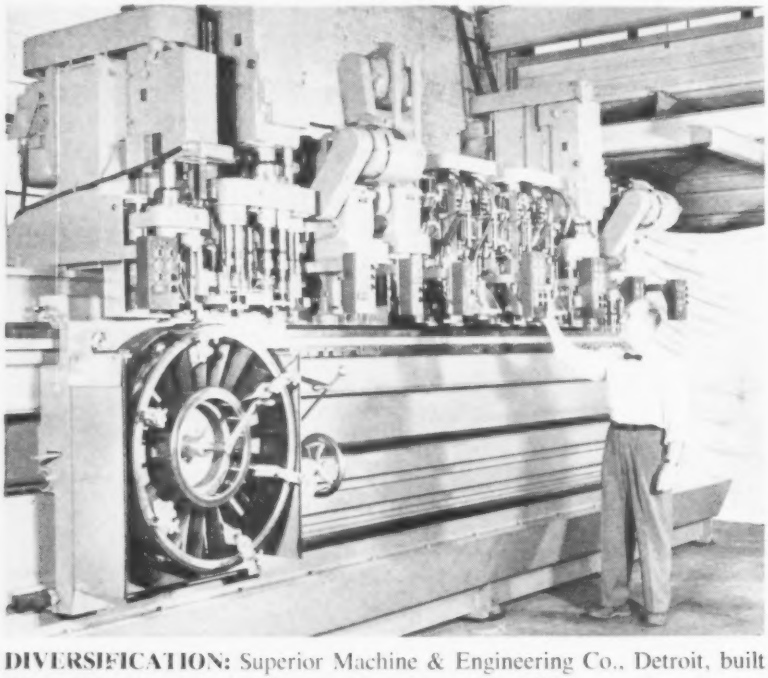
Deliveries Excellent — Promised delivery times are excellent. Small jigs and fixtures have delivery promises of 1-4 weeks, medium ones 4-8 weeks, and large ones 4-8 weeks. Only extra large built-up jigs and fixtures consistently require more than 8 weeks. Gages and forming tools carry delivery promises of 1-4 weeks.

As one tool builder remarked, "We'll promise anything for delivery times. It's a buyer's market."

Die builders are in much the same boat as the tool companies. They have the facilities, the personnel. Now they want the jobs.

Welcome Mat Out — Many die companies are willing to take on non-automotive clients if they can be sandwiched between automotive contracts. Recently, diemakers have found business in the electrical, small appliance, rubber, refrigeration, garden implement and plumbing fields.

There has been a substantial drop in the time required for delivery of dies. Small forging dies are being promised in 4-8 weeks. Larger dies require more than 8 weeks, as do most lamination dies. Plastic molds vary from 4-8 weeks to more than 8 weeks. Excellent service is available on sheet metal dies. Small and medium dies are being quoted at 1-4 weeks delivery time. Very few quotes are over 8 weeks except for the large dies.



DIVERSIFICATION: Superior Machine & Engineering Co., Detroit, built this unit for the aircraft industry. It's a 24-station drilling, reaming, tapping and boring machine for jet engine casing work.

Prices

B. F. Goodrich Industrial Products Co. advanced, effective Aug. 5, its sale price on belting 2 to 3 pct, on hose 3 to 4½ pct, and on special products 3 to 5 pct.

Easiest, fastest way to kill fire...

KIDDE'S NEW DRY CHEMICAL EXTINGUISHER

Here – from Kidde – is the newest, the fastest, the easiest-to-operate dry chemical fire extinguisher!

Look at the extra large, aluminum handle and trigger—even a gloved hand fits comfortably with room to spare. Pick the unit up – it hangs straight – no awkward angle to throw you off balance.

If fire strikes, follow the simple directions: "Remove Horn" – automatically the trigger safety lock is released – "Pull Trigger" – instantly a cloud of fire-killing dry chemical whooshes out of the nozzle and fire's out! With this unit, designed by Kidde engineers working with Henry Dreyfuss personnel, you don't have to be a trained fireman to get perfect results.

Built for a lifetime of use, the handsome new 20 and 30 pound Kidde dry chemical extinguishers have top ratings from Underwriters' Laboratories, require only 225-250 psi charging pressure. The rugged pressure gauge is recessed in handle for maximum protection. Tells at a glance if the unit is ready for use.

Available nationally through Kidde's sales and service organization. Write Kidde today for the name of nearest distributor.

Kidde

Walter Kidde & Company, Inc.
849 Main Street, Belleville 9, N. J.

Walter Kidde & Company of Canada Ltd., Montreal — Toronto

Sheet Sales Show More Life

While trend isn't general, cold-rolled sheet market is getting more active.

Midwest suppliers, for example, find order rate to be on continuing rise.

■ The cold-rolled sheet market—at least in the Midwest—is beginning to show some life.

While the pickup isn't reflected by Eastern or Detroit area mills, here's why Chicago sheet suppliers are happier:

Requests for sheet are running neck-and-neck with structurals as the most popular products on fourth quarter books.

Warehouses report a definite increase in cold-rolled sheet activity for August and September with a continued rise expected in October.

Distributors looking for sales no longer need compete with stocks of cold-rolled sheet turned loose from consumer inventories. These have disappeared from the market.

Sales of secondary sheets have improved.

One interesting point: Automotive industry buying hasn't been a factor in the sheet improvement. And that indicates orders from the carmakers will make October an even better month for the sheetmakers.

Sheets and Strip—Upsurge in buying is getting underway in the Midwest. Eastern mills report continued buyer caution. Fourth quarter sheet bookings are coming in at **Chicago** mills. One producer says October books are now about 25 pct filled for sheet. Cold-rolled sheet is as popular in buyer requests as are structurals. Warehouses there are sharing in the pickup. Automotive buying, however, isn't responsible for the healthier order level. Mills feel automotive sheet buyers will put in orders about 30 days later than the producers expected.

Eastern mills are not as active. One sheet supplier sees its continuous mill operations running at about 80 pct for the balance of the year. Cold-rolled sheet and strip are doing slightly better than hot-rolled in this market.

Shutdown at Great Lakes Steel caused **Detroit** automakers to shift some orders for September delivery to other mills.

Galvanized sheet remains slow. **Chicago** area mills are quoting 2-4 week delivery. **West Coast** warehouses, with bulging stocks on hand, are cutting prices on the product.

Bars—Market remains sluggish. Hot rolled carbon bar is available for almost immediate delivery in the Midwest and cold finished can be obtained in 1-4 weeks. **Eastern** producer indicates ordering for August and September was at slightly better pace than for July. Alloy bars are poor, although stainless bars are described as "holding up well" in the **Detroit** area. Far-western mills are digging for business. Automotive bars in that area are easing.

More Rounds in South—Connors Steel Div., H. K. Porter Co., Inc., has announced an expansion at its Birmingham, Ala., facilities for more production of cold drawn rounds in sizes from ½ to 4½ in. in diam. This is the second increase in Connors productive capacity for cold drawn rounds within the last 90 days.

Plates and Shapes—Many mills in the **East** and Midwest have plate carry-overs ranging from 2 to 6 weeks. A **Philadelphia** area mill is still rolling some July tonnages and has a carryover from August into September. They note customer orders for the latter month show buyers are shifting orders for lighter product (3/16 and ¼ in.) back to plate mills as sheet-strip mill rolling of light plate declines. **Chicago** area mills indicate plate carryovers are lengthening.

With rigid quotas set on 4th quarter structurals by Midwest mills, deliveries are due for further slowdown. An Eastern mill reports standard structurals are still strong, only small angles and beams are described as any easier to get.

Pipe and Tubing—Seamless pipe continues strong. Other grades are described as "soft" in the **Detroit** area. Orders for continuous weld pipe are beginning to taper off on the **West Coast** as a plumber strike in the Los Angeles area goes into its second month.

Fasteners—Customers are working down inventories of standard bolts and playing the mills against one another when they want fast delivery to fill inventory holes. Standard items are being shipped off the shelf and specification items require only about 2-3 weeks.

Correction — The IRON AGE Pig Iron Composite appearing in the July 25, Aug. 1 and Aug. 8 issues should have been $66.40.

PURCHASING AGENT'S CHECKLIST

Nickel outlook good with chance of surplus by 1961. **P. 51**

Construction equipment makers hope the worst is over. **P. 58**

High rate of consumption encourages zinc producers. **P. 60**

COMPARISON OF PRICES

(Effective Aug. 13, 1957)

Steel prices on this page are the average of various f.o.b. quotations of major producing areas: Pittsburgh, Chicago, Gary, Cleveland, Youngstown.

Price advances over previous week are printed in **Heavy Type**; declines appear in *Italics*.

	Aug. 13 1957	Aug. 6 1957	July 16 1957	Aug. 14 1956
Flat-Rolled Steel: (per pound)				
Hot-rolled sheets	4.925¢	4.925¢	4.925¢	4.675¢
Cold-rolled sheets	6.05	6.05	6.05	5.75
Galvanized sheets (10 ga.)	6.60	6.60	6.60	6.30
Hot-rolled strip	4.925	4.925	4.925	4.668
Cold-rolled strip	7.17	7.17	7.17	6.883
Plate	5.12	5.12	5.12	4.87
Plates, wrought iron	13.15	13.15	13.15	10.40
Stainl' C-R strip (No. 302)	52.00	52.00	52.00	47.50
Tin and Terneplate: (per base box)				
Tinplate (1.50 lb.) cokes	$10.30	$10.30	$10.30	$9.85
Tin plates, electro (0.50 lb.)	9.00	9.00	9.00	8.55
Special coated *mfg.* ternes	9.55	9.55	9.55	9.10
Bars and Shapes: (per pound)				
Merchant bar	5.425¢	5.425¢	5.425¢	5.075¢
Cold finished bars	7.30	7.30	7.30	6.85
Alloy bars	6.475	6.475	6.475	6.125
Structural shapes	5.275	5.275	5.275	5.00
Stainless bars (No. 302)	45.00	45.00	45.00	40.75
Wrought iron bars	14.45	14.45	14.45	11.50
Wire: (per pound)				
Bright wire	7.65¢	7.65¢	7.65¢	7.20¢
Rails: (per 100 lb.)				
Heavy rails	$5.525	$5.525	$5.525	$5.075
Light rails	6.50	6.50	6.50	6.00
Semifinished Steel: (per net ton)				
Rerolling billets	$77.50	$77.50	$77.50	$74.00
Slabs, rerolling	77.50	77.50	77.50	74.00
Forging billets	96.00	96.00	96.00	91.50
Alloy blooms, billets, slabs	114.00	114.00	114.00	107.00
Wire Rod and Skelp: (per pound)				
Wire rods	6.15¢	6.15¢	6.15¢	5.80 ¢
Skelp	4.875	4.875	4.875	4.225
Finished Steel Composite: (per pound)				
Base price	5.967¢	5.967¢	5.967¢	5.622¢

	Aug. 13 1957	Aug. 6 1957	July 16 1957	Aug. 14 1956
Pig Iron: (per gross ton)				
Foundry, del'd Phila.	$70.38	$70.38	$70.38	$67.76
Foundry, Valley	66.50	66.50	65.00	63.00
Foundry, Southern Cin'ti	70.67	70.67	70.17	66.93
Foundry, Birmingham	62.50	62.50	61.33	59.00
Foundry, Chicago	66.50	66.50	65.00	63.00
Basic, del'd Philadelphia	69.88	69.88	69.88	66.98
Basic, Valley furnace	66.00	66.00	64.50	62.50
Malleable, Chicago	66.50	66.50	65.00	63.00
Malleable, Valley	66.50	66.50	65.00	63.00
Ferromanganese, cents per lb†	12.75¢	12.75¢	12.75¢	10.75¢

74 to 76 pct Mn base.

Pig Iron Composite: (per gross ton)				
Pig iron	$66.40	$66.40*	$64.95	$63.15
Scrap: (per gross ton)				
No. 1 steel, Pittsburgh	$55.50	$55.50	$56.50	$57.50
No. 1 steel, Phila. area	51.50	51.50	54.50	56.50
No. 1 steel, Chicago	53.50	54.50	51.50	56.50
No. 1 Bundles, Detroit	50.50	50.50	48.50	54.50
Low phos., Youngstown	58.50	58.50	56.50	65.50
No. 1 mach'y cast, Pittsburgh	58.50	58.50	58.50	60.50
No. 1 mach'y cast, Philadel'a	56.50	56.50	56.50	57.50
No. 1 mach'y cast, Chicago	53.50	53.50	50.50	59.50
Steel Scrap Composite: (per gross ton)				
No. 1 heavy melting scrap	$53.50	$53.83	$54.17	$56.83
Coke, Connellsville: (per net ton at oven)				
Furnace coke, prompt	$15.38	$15.38	$15.38	$14.50
Foundry coke, prompt	$17.50-$19	$17.50-$19	$17.50-$19	$17.50
Nonferrous Metals: (cents per pound to large buyers)				
Copper, electrolytic, Conn.	28.50	29.25	29.25	40.00
Copper, Lake, Conn.	28.50	29.25	29.25	40.00
Tin, Straits, N. Y.	95.47.50	95.00*	96.00	98.625
Zinc, East St. Louis	10.00	10.00	10.00	13.50
Lead, St. Louis	13.80	13.80	13.80	15.80
Aluminum, virgin ingot	28.10	28.10	27.10	25.90
Nickel, electrolytic	74.00	74.00	74.00	64.50
Magnesium, ingot	36.00	36.00	36.00	34.50
Antimony, Laredo, Tex.	33.00	33.00	33.00	33.00

† Tentative. ‡ Average. * Revised.

Finished Steel Composite

Weighted index based on steel bars, shapes, plates, wire, rails, black pipe, hot and cold rolled sheets and strips.

Pig Iron Composite

Based on averages for basic iron at Valley furnaces and foundry iron at Chicago, Philadelphia, Buffalo, Valley and Birmingham.

Steel Scrap Composite

Averages of No. 1 heavy melting steel scrap delivered to consumers at Pittsburgh, Philadelphia and Chicago.

PIG IRON

Dollars per gross ton, f.o.b., subject to switching charges.

←To identify producers, see Key on P. 158→

Producing Point	Basic	Fdry.	Mall.	Bess.	Low Phos.
Birdsboro, Pa. *B6*	68.00	68.50	69.00	69.50	.....
Birmingham *R3*	62.00	62.50*	.....	.....	.....
Birmingham *W9*	62.00	62.50*	66.50	.....	.....
Birmingham *U4*	62.00	62.50*	66.50	.....	.....
Buffalo *R3*	66.00	66.50	67.00	67.50	.....
Buffalo *H1*	66.00	66.50	67.00	67.50	.....
Buffalo *W6*	66.00	66.50	67.00	67.50	.....
Chester *P2*	66.50	67.00	67.50	.....	.....
Chicago *I4*	66.00	66.50	66.50	67.00	.....
Cleveland *A5*	66.00	66.50	66.50	67.00	71.00†
Cleveland *R3*	66.00	66.50	66.50	67.00	.....
Duluth *I4*	66.00	66.50	66.50	67.00	71.00†
Erie *I4*	66.00	66.50	66.50	67.00	71.00†
Everett *M6*	66.50	67.00	67.50	.....	.....
Fontana *K1*	74.00	74.50	.....	.....	.....
Geneva, Utah *C7*	66.00	66.50	.....	.....	.....
Granite City *G2*	67.90	68.40	68.90	.....	.....
Hubbard *Y1*	.....	.....	66.50	.....	.....
Ironton, Utah *C7*	66.00	66.50	.....	.....	.....
Midland *C11*	66.00	.....	.....	.....	.....
Minnequa *C6*	68.00	68.50	69.00	.....	.....
Monessen *P6*	66.00	.....	.....	.....	.....
Neville Is. *P4*	66.00	66.50	66.50	67.00	71.00†
N. Tonawanda *T1*	.....	66.50	67.00	67.50	.....
Sharpsville *S3*	66.00	66.50	66.50	67.00	.....
So. Chicago *R3*	66.00	66.50	66.50	.....	.....
So. Chicago *W8*	66.00	.....	66.50	67.00	.....
Swedeland *A2*	68.00	68.50	69.00	69.50	.....
Toledo *I4*	66.00	66.50	66.50	67.00	.....
Troy, N. Y. *R3*	68.00	68.50	69.00	69.50	74.00
Youngstown *Y1*	.....	.....	66.50	67.00	.....

DIFFERENTIALS: Add, 75¢ per ton for each 0.25 pct silicon or portion thereof over base (1.75 to 2.25 pct except low phos., 1.75 to 2.00 pct) 50¢ per ton for each 0.25 pct manganese or portion thereof over 1 pct, $2 per ton for 0.50 to 0.75 pct nickel, $1 for each additional 0.25 pct nickel. * Add $1.00 for 0.31 0.69 pct phos. † Intermediate low phos. ‡ Add $1.00 for 0.31 to 0.50 pct phos.

Silvery Iron: Buffalo (6 pct), *H1*, $78.50; Jackson, *J1, I4* (Globe Div.), $77.25; Niagara Falls (15.01-15.50), $101.00; Keokuk (14.01-14.50), $103.50; (15.51-16.00), $106.50. Add $1.00 per ton for each 0.50 pct silicon over base (6.01 to 6.50 pct) up to 18 pct. Add $1.25 for each 0.50 pct manganese over 1.00 pct. Bessemer silvery pig iron (under .10 pct phos.): $64.00. Add $1.00 premium for all grades silvery to 18 pct.

STAINLESS STEEL

Base price cents per lb f.o.b. mill

Product	201	202	301	302	303	304	316	321	347	403	410	416	430
Ingots, reroll.	22.00	23.75	23.25	25.25	—	27.00	39.75	32.25	37.00	—	16.75	—	17.00
Slabs, billets	27.00	27.00	28.00	31.50	32.00	33.25	49.50	40.00	46.50	—	21.50	—	21.75
Billets, forging	—	36.50	—	38.00	41.00	40.50	62.25	47.00	55.75	32.00	28.25	28.75	28.75
Bars, struct.	42.00	43.00	44.25	45.00	48.00	47.75	73.00	55.50	64.75	37.75	33.75	34.25	34.25
Plates	44.25	45.00	46.25	47.25	—	50.75	76.75	59.75	69.75	40.25	35.00	—	36.00
Sheets	48.50	49.25	51.25	52.00	—	55.50	81.50	65.50	79.25	—	40.25	—	40.75
Strip, hot-rolled	36.00	39.00	37.25	40.50	—	44.25	69.25	53.50	63.50	—	31.00	—	32.00
Strip, cold-rolled	45.00	49.25	47.50	52.00	—	55.50	81.50	65.50	79.25	48.25	40.25	—	40.75
Wire CF; Rod HR	—	40.75	42.00	42.75	45.75	45.50	69.50	52.50	61.50	36.00	32.25	32.75	32.75

STAINLESS STEEL PRODUCING POINTS:

Sheets: Midland, Pa., *C11;* Brackenridge, Pa., *A3;* Butler, Pa., *A7;* Vandergrift, Pa., *U1;* Washington, Pa., *W2, J2* Baltimore, *E1;* Middletown, O., *A7;* Massillon, O., *R3;* Gary, *U1;* Bridgeville, Pa., *U2;* New Castle, Ind., *I2.*

Strip: Midland, Pa., *C11;* Waukegan, Cleveland, *A5;* Carnegie, Pa., *S9;* McKeesport, Pa., *F1;* Reading, Pa., *C2;* Washington, Pa., *W2;* W. Leechburg, Pa., *A3;* Bridgeville, Pa., *U2;* Detroit, *M2;* Canton-Massillon, O., *R3;* Harrison, N. J., *D3;* Youngstown, *J1,* Sharon, Pa., *S1;* Butler, Pa., *A7;* Wallingford, Conn., *U3* (plus further conversion extras); *W1;* New Bedford, Mass. (.25¢ per lb higher), *R6;* Gary, *U1* (.25¢ per lb higher).

Bar: Baltimore, *A7;* S. Duquesne, Pa., *U1;* Munhall, Pa., *U1;* Reading, Pa., *C2;* Titusville, Pa., *U2;* Washington, Pa. *J2;* McKeesport, Pa., *U1, F1;* Bridgeville, Pa., *U2;* Dunkirk, N. Y., *A3;* Massillon, O., *R3;* S. Chicago, *U1;* Syracuse, N. Y., *C11;* Watervliet, N. Y., *A3;* Waukegan, *A5;* Canton, O., *T5, R3;* Ft. Wayne, *I4;* Philadelphia, *D5;* Detroit, *R5;* Gary *U1.*

Wire: Waukegan, *A5;* Massillon, O., *R3;* McKeesport, Pa., *F1;* Ft. Wayne, *J4;* Harrison, N. J., *D3;* Baltimore, *A7* Dunkirk, *A3;* Monessen, *P1;* Syracuse, *C11;* Bridgeville, *U2.*

Structurals: Baltimore, *A7;* Massillon, O., *R3;* Chicago, Ill., *J4;* Watervliet, N. Y., *A3;* Syracuse, *C11;* S. Chicago, *U1.*

Plates: Brackenridge, Pa., *A3;* Chicago, *U1;* Munhall, Pa., *U1;* Midland, Pa., *C11;* New Castle, Ind., *I2;* Middletown, *A7;* Washington, Pa., *J2;* Cleveland, Massillon, *R3;* Coatesville, Pa., *C15;* Philadelphia, *D5;* Vandergrift, Pa., *U1;* Gary, *U1;*

Forgings billets: Midland, Pa., *C11;* Baltimore, *A7;* Washington, Pa., *J2;* McKeesport, *F1;* Massillon, Canton, O., *R3* Watervliet, *A3;* Pittsburgh, Chicago, *U1;* Syracuse *C11;* Detroit *R5;* Munhall, Pa., S. Chicago, *U1.*

IRON AND STEEL SCRAP MARKETS

Market Rides Out Summer Lull

The traditional doldrums of the summer months have failed to weaken the market substantially.

Moderate fluctuations, only rarely affecting No. 1 steelmaking grades, characterize the market.

■ A steady market prevails from coast to coast. A few up or down fluctuations are apparent here and there, but no marked changes in the market are apparent.

Only in Chicago, where the market has been fluctuating nervously for some time, did primary grades move. There, buying at the bottom of the spread brought prices down slightly.

This is not necessarily an indication of weakness, as dealer asking prices remained firm and railroad grades advanced. All in all, the market is firm there as well as most of the Midwest.

In Detroit a troublesome labor situation threatens to hurt the market if a strike at the major consumer extends much further. Prices may weaken for a time if Detroit sources of scrap must send a greater portion of their scrap to other markets.

Strength of railroad grades and other premium items indicates underlying strength in most markets. On the East Coast, export is again brisk, putting a floor under what might have been a weakening market.

In Washington, the Business and Defense Services Administration is making two scrap studies. The first will cover prompt industrial scrap and will include copper and aluminum.

Some time after this is out, BDSA will make its second report to Congress on the scrap situation. This report will deal primarily with obsolete scrap.

Pittsburgh — One consumer stepped into the market for a small tonnage of steelmaking grades. The deal wasn't enough to indicate a change in the market one way or another. As a result, prices held firm and steady for the moment.

Chicago—In a confused market, Chicago prices slipped $1 to $2 following purchases at the bottom of the spread by a large mill. Offers of $56 for No. 1 industrial heavy brought in some scrap, but was offset by another reported sale at $57 for the same grade. Dealer asking prices held firm. Similarly, prices paid for railroad grades and factory bundles advanced slightly.

Philadelphia—An extremely active export market is compensating for lack of interest by domestic consumers. More cargo loadings are lined up for the next six weeks than have been seen in many months.

New York — Steelmaking and cast grades continue unchanged in a quiet market. Mixed borings and turnings dropped $1 to $28 top. Machine shop turnings were incorrectly quoted in the Aug. 8 issue. Correct price was $26.00 to $27.00.

Detroit—A wildcat strike and a railroad embargo at another mill have stopped the market here dead in its tracks. Both are in their second week. Dealers are unable to make any sales worthy of note.

Cleveland—The market is at a standstill in both Cleveland and the Valley because of absence of mill buying, plant vacations and hot weather. One small sale of No. 1 heavy melting was made in the Valley at prevailing prices. Prices are too high for yards to lay down scrap and they can't sell what they have so most are simply passing time.

St. Louis—Recent price advances for dealer grades stimulated the movement of scrap to the St. Louis industrial district, and mills are now taking in enough to meet melting needs. Consumer buying of cast grades has moved prices up $1.50 to $3 per ton.

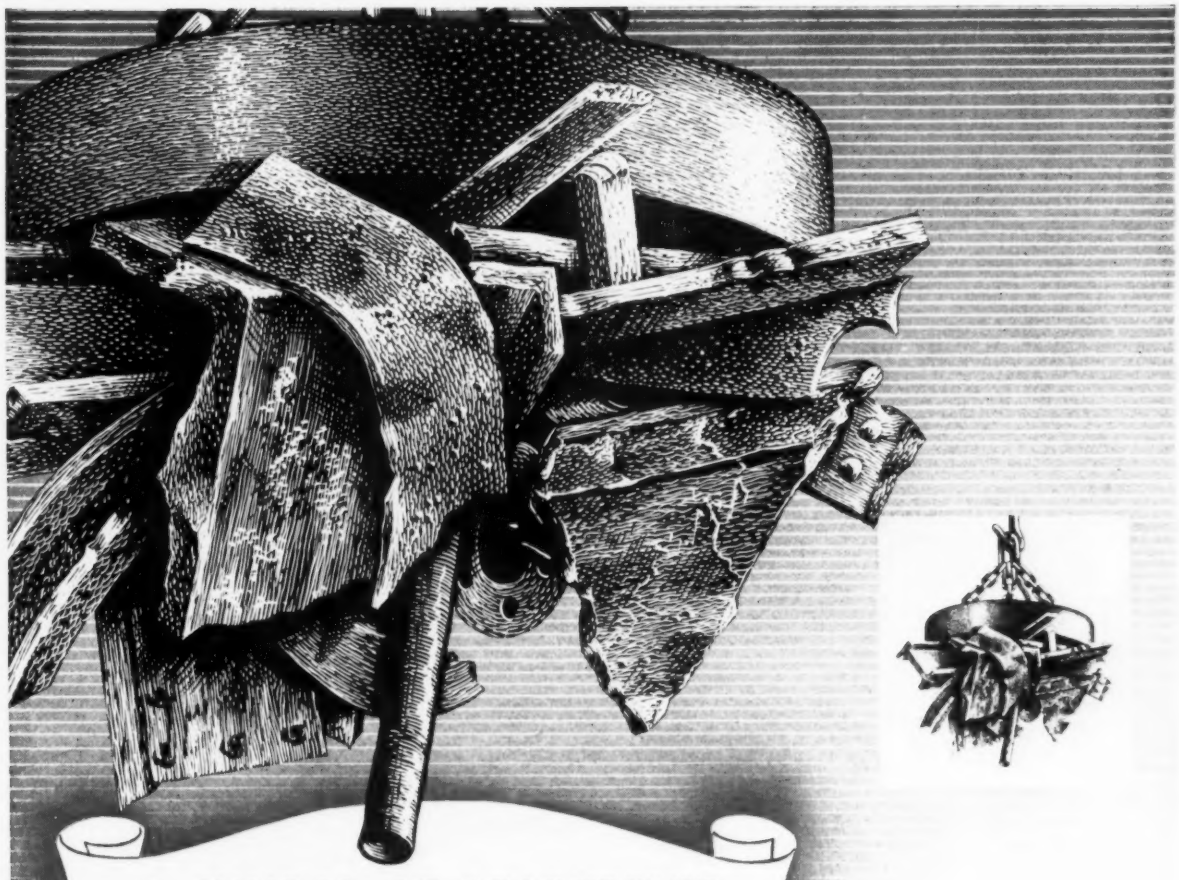
Birmingham — Most mills seem to have filled their needs by recent purchases of railroad and industrial items. They have reduced purchases from dealers somewhat, but this has not affected prices. The openhearth market is very quiet, with little or no buying, but buying of electric furnace grades is active.

Cincinnati — Both major area mills are taking good tonnages at prevailing prices. No new buying is expected until regular monthly orders. The good local market has also halted upriver shipments.

Buffalo—The market is showing signs of activity after a long lull. Two mills bought small quantities of No. 1 heavy melting at $48 to $49, or $3 higher than previous prices. A small sale of shoveling turnings was made at quoted prices. Low phos is up in sympathy.

Boston—Receipts by yards have fallen to next to nothing. Yards are practically empty, but demand is also off. Export is slow and domestic demand is down. Best hoped for is an upturn after Labor Day.

West Coast—The market is dull. Prices are on the weak side. Some predictions indicate the market for No. 1 heavy melting is in for a drop. Exporting to Japan is at a virtual standstill.



A SYMBOL OF LEADERSHIP IN IRON & STEEL SCRAP SINCE 1889

Luria Brothers and Company, Inc.

MAIN OFFICE

PHILADELPHIA NATIONAL BANK BLDG.

Philadelphia 7, Penna.

PLANTS

LEBANON, PENNA.
READING, PENNA.
MODENA, PENNA.
DETROIT (ECORSE), MICHIGAN
PITTSBURGH, PENNA.
ERIE, PENNA.

OFFICES

BIRMINGHAM, ALA.
BOSTON, MASS.
BUFFALO, N. Y.
CHICAGO, ILLINOIS
CINCINNATI, OHIO
CLEVELAND, OHIO
DETROIT, MICHIGAN
HOUSTON, TEXAS
KOKOMO, INDIANA
LEBANON, PENNA.
LOS ANGELES, CAL.
MEMPHIS, TENN.
NEW YORK, N. Y.
PITTSBURGH, PENNA.
PUEBLO, COLORADO
READING, PENNA.
ST. LOUIS, MO.
SAN FRANCISCO, CAL.
SEATTLE, WASH.

in Canada MONTREAL, QUEBEC — HAMILTON, ONTARIO

EXPORTS-IMPORTS LIVINGSTON & SOUTHARD, INC. 99 Park Ave., New York, N. Y. *Cable Address:* **FORENTRACO**

SCRAP PRICES *(Effective Aug. 13, 1957)*

Iron and Steel Scrap

Going prices of iron and steel scrap as obtained in the trade by THE IRON AGE based on representative tonnages. All prices are per gross ton delivered to consumer unless otherwise noted.

Pittsburgh

No. 1 hvy. melting	$55.00 to $56.00
No. 2 hvy. melting	48.00 to 49.00
No. 1 dealer bundles	55.00 to 56.00
No. 1 factory bundles	63.00 to 64.00
No. 2 bundles	45.00 to 46.00
No. 1 busheling	55.00 to 56.00
Machine shop turn.	33.00 to 34.00
Mixed bor. and ms. turn.	33.00 to 34.00
Shoveling turnings	37.00 to 38.00
Cast iron borings	37.00 to 38.00
Low phos. punch'gs plate	63.00 to 64.00
Heavy turnings	50.00 to 51.00
No. 1 RR. hvy. melting	64.00 to 65.00
Scrap rails, random lgth.	72.00 to 73.00
Rails 2 ft and under	75.00 to 76.00
RR. steel wheels	73.00 to 74.00
RR. spring steel	73.00 to 74.00
RR. couplers and knuckles	73.00 to 74.00
No. 1 machinery cast.	58.00 to 59.00
Cupola cast	49.00 to 50.00
Heavy breakable cast.	47.00 to 48.00

Chicago

No. 1 hvy. melting	$53.00 to $54.00
No. 2 hvy. melting	46.00 to 48.00
No. 1 dealer bundles	54.00 to 55.00
No. 1 factory bundles	59.00 to 61.00
No. 2 bundles	40.00 to 41.00
No. 1 busheling	53.00 to 54.00
Machine shop turn.	34.00 to 36.00
Mixed bor. and turn.	37.00 to 38.00
Shoveling turnings	37.00 to 38.00
Cast iron borings	37.00 to 38.00
Low phos. forge crops	64.00 to 65.00
Low phos. punch'gs plate	60.00 to 61.00
Low phos. 5 ft and under	58.00 to 59.00
No. 1 RR. hvy. melting	60.00 to 61.00
Scrap rails, random lgth.	72.00 to 73.00
Rerolling rails	79.00 to 80.00
Rails 2 ft and under	78.00 to 79.00
Locomotive tires, cut	64.00 to 65.00
Cut bolsters & side frames	65.00 to 66.00
Angles and splice bars	68.00 to 69.00
RR steel car axles	83.00 to 84.00
RR couplers and knuckles	62.00 to 63.00
No. 1 machinery cast.	53.00 to 54.00
Cupola cast	48.00 to 49.00
Heavy breakable cast.	45.00 to 47.00
Cast iron brake shoe	48.00 to 49.00
Cast iron wheels	54.00 to 55.00
Malleable	62.00 to 63.00
Stove plate	46.00 to 47.00
Steel car wheels	56.00 to 66.00

Philadelphia Area

No. 1 hvy. melting	$51.00 to $52.00
No. 2 hvy. melting	45.00 to 46.00
No. 1 dealer bundles	52.00 to 53.00
No. 2 bundles	42.50 to 43.50
No. 1 busheling	52.00 to 53.00
Machine shop turn.	35.00 to 36.00
Mixed bor. short turn.	36.00 to 37.00
Cast iron borings	36.00 to 37.00
Shoveling turnings	38.00 to 39.00
Clean cast. ch-m. borings	43.00 to 44.00
Low phos 5 ft and under	57.00 to 58.00
Low phos. 2 ft and under	58.00 to 59.00
Low phos punch'gs	58.00 to 59.00
Elec. furnace bundles	56.00 to 57.00
Heavy turnings	47.00 to 48.00
RR. steel wheels	65.00 to 66.00
RR. spring steel	65.00 to 66.00
Rails 18 in. and under	71.00 to 72.00
Cupola cast	46.00 to 47.00
Heavy breakable cast.	52.00 to 53.00
Cast iron car wheels	57.00 to 58.00
Malleable	61.00 to 62.00
Unstripped motor blocks	41.00 to 42.00
No. 1 machinery cast.	56.00 to 57.00

Cleveland

No. 1 hvy. melting	$53.00 to $54.00
No. 2 hvy. melting	45.00 to 46.00
No 1 dealer bundles	53.00 to 54.00
No. 1 factory bundles	57.50 to 58.50
No. 2 bundles	41.00 to 42.00
No. 1 busheling	53.00 to 54.00
Machine shop turn.	26.00 to 27.00
Mixed bor. and turn.	30.00 to 31.00
Shoveling turnings	30.00 to 31.00
Cast iron borings	30.00 to 31.00
Cut struct'r'l & plates, 2 ft & under	60.00 to 61.00
Drop forge flashings	53.00 to 54.00
Low phos. punch'gs, plate	54.00 to 55.00
Foundry steel, 2 ft & under	55.00 to 56.00
No. 1 RR. heavy melting	57.00 to 58.00
Rails 2 ft and under	73.00 to 74.00
Rails 18 in. and under	74.00 to 75.00
Railroad grate bars	35.00 to 36.00
Steel axle turnings	33.00 to 34.00
Railroad cast.	56.00 to 57.00
No. 1 machinery cast.	55.00 to 56.00
Stove plate	50.00 to 51.00
Malleable	62.00 to 63.00

Youngstown

No. 1 hvy. melting	$56.00 to $57.00
No. 2 hvy. melting	48.00 to 49.00
No. 1 dealer bundles	56.00 to 57.00
No. 2 bundles	44.00 to 45.00
Machine shop turn.	32.00 to 33.00
Shoveling turnings	36.00 to 37.00
Cast iron borings	36.00 to 37.00
Low phos. plate	58.00 to 59.00

Buffalo

No. 1 hvy. melting	$48.00 to $49.00
No. 2 hvy. melting	39.00 to 40.00
No. 1 busheling	48.00 to 49.00
No. 1 dealer bundles	48.00 to 49.00
No. 2 bundles	35.00 to 36.00
Machine shop turn.	28.00 to 29.00
Mixed bor. and turn.	30.00 to 31.00
Shoveling turnings	34.00 to 35.00
Cast iron borings	31.00 to 32.00
Low phos. plate	55.00 to 56.00
Scrap rails, random lgth.	59.00 to 60.00
Rails 2 ft and under	69.00 to 70.00
RR. steel wheels	56.00 to 57.00
RR. spring steel	52.00 to 53.00
RR. couplers and knucklers	52.00 to 53.00
No. 1 machinery cast.	52.00 to 53.00
No. 1 cupola cast.	47.00 to 48.00

Detroit

Brokers buying prices per gross ton, on cars:

No. 1 hvy. melting	$50.00 to $51.00
No. 2 hvy. melting	40.00 to 41.00
No. 1 dealer bundles	50.00 to 51.00
No. 2 bundles	37.00 to 38.00
No. 1 busheling	48.00 to 49.00
Drop forge flashings	47.00 to 48.00
Machine shop turn.	26.00 to 27.00
Mixed bor. and turn.	29.00 to 30.00
Shoveling turnings	29.00 to 30.00
Cast iron borings	29.00 to 30.00
Low phos. punch'gs plate	48.00 to 49.00
No. 1 cupola cast.	48.00 to 49.00
Heavy breakable cast.	44.00 to 45.00
Stove plate	45.00 to 46.00
Automotive cast.	54.00 to 55.00

St. Louis

No. 1 hvy. melting	$50.00 to $51.00
No. 2 hvy. melting	47.00 to 48.00
No 1 dealer bundles	50.00 to 51.00
No. 2 bundles	42.00 to 43.00
Machine shop turn.	34.00 to 35.00
Cast iron borings	36.00 to 37.00
Shoveling turnings	36.00 to 37.00
No. 1 RR. hvy. melting	59.00 to 60.00
Rails, random lengths	66.00 to 67.00
Rails 18 in. and under	73.00 to 74.00
Locomotive tires uncut	59.00 to 60.00
Angles and splice bars	62.00 to 63.00
Std. steel car axles	72.00 to 73.00
RR. specialties	63.00 to 64.00
Cupola cast	49.00 to 50.00
Heavy breakable cast.	44.00 to 45.00
Cast iron brake shoes	43.00 to 44.00
Stove plate	46.00 to 47.00
Cast iron car wheels	51.00 to 52.00
Rerolling rails	77.00 to 78.00
Unstripped motor blocks	44.00 to 45.00

Boston

Brokers buying prices per gross ton, on cars:

No. 1 hvy. melting	$41.00 to $42.00
No. 2 hvy. melting	35.00 to 36.00
No 1 dealer bundles	41.00 to 42.00
No. 2 bundles	34.00 to 34.50
No. 1 busheling	41.00 to 42.00
Elec. furnace, 3 ft & under	46.00 to 47.00
Machine shop turn.	25.00 to 26.00
Mixed bor. and short turn.	27.00 to 28.00
Shoveling turnings	28.00 to 29.00
Clean cast. chem. borings	30.50 to 31.50
No. 1 machinery cast.	40.00 to 41.00
Mixed cupola cast.	33.00 to 34.00
Heavy breakable cast.	42.00 to 43.00
Stove plate	32.00 to 33.00
Unstripped motor blocks	31.00 to 32.00

New York

Brokers buying prices per gross ton, on cars:

No. 1 hvy. melting	$49.00 to $50.00
No. 2 hvy. melting	42.00 to 43.00
No. 2 dealer bundles	39.00 to 39.50
Machine shop turn.	26.00 to 27.00
Mixed bor. and turn.	27.00 to 28.00
Shoveling turnings	29.00 to 30.00
Clean cast. chem. borings	34.00 to 35.00
No. 1 machinery cast.	46.00 to 47.00
Mixed yard cast.	41.00 to 42.00
Charging box cast.	46.00 to 47.00
Heavy breakable cast.	46.00 to 47.00
Unstripped motor blocks	33.00 to 34.00

Birmingham

No. 1 hvy. melting	$49.00 to $50.00
No. 2 hvy. melting	42.50 to 43.50
No. 1 dealer bundles	49.00 to 50.00
No. 2 bundles	39.50 to 40.50
No. 1 busheling	49.00 to 50.00
Machine shop turn.	39.00 to 40.00
Shoveling turnings	40.00 to 41.00
Cast iron borings	27.00 to 28.00
Electric furnace bundles	51.00 to 52.00
Elec. furnace, 3 ft & under	49.00 to 50.00
Bar crops and plate	55.00 to 56.00
Structural and plate, 2 ft	55.00 to 56.00
No. 1 RR hvy. melting	55.00 to 56.00
Scrap rails, random lgth.	64.00 to 65.00
Rails, 18 in. and under	69.00 to 70.00
Angles & splice bars	60.00 to 61.00
Rerolling rails	77.00 to 78.00
No. 1 cupola cast.	54.00 to 55.00
Stove plate	54.00 to 55.00
Charging box cast.	37.00 to 38.00
Cast iron car wheels	46.00 to 47.00
Unstripped motor blocks	15.00 to 16.00

Cincinnati

Brokers buying prices per gross ton, on cars:

No. 1 hvy. melting	$52.00 to $53.00
No. 2 hvy. melting	46.00 to 47.00
No. 1 dealer bundles	51.00 to 52.00
No 2 bundles	43.00 to 44.00
Machine shop turn.	33.00 to 34.00
Mixed bor. and turn.	30.00 to 31.00
Shoveling turnings	36.00 to 37.00
Cast iron borings	30.00 to 31.00
Low phos. 18 in. and under	59.00 to 60.00
Rails, random lengths	64.00 to 65.00
Rails, 18 in. and under	71.00 to 72.00
No. 1 cupola cast.	45.00 to 46.00
Hvy. breakable cast.	43.00 to 44.00
Drop broken cast.	55.00 to 56.00

San Francisco

No. 1 hvy. melting	$47.00
No. 2 hvy. melting	45.00
No. 1 dealer bundles	46.00
No. 2 bundles	35.00
Machine shop turn.	32.00
Cast iron borings	$30.00 to 32.00
No. 1 RR. hvy. melting	47.00
No. 1 cupola cast.	53.00

Los Angeles

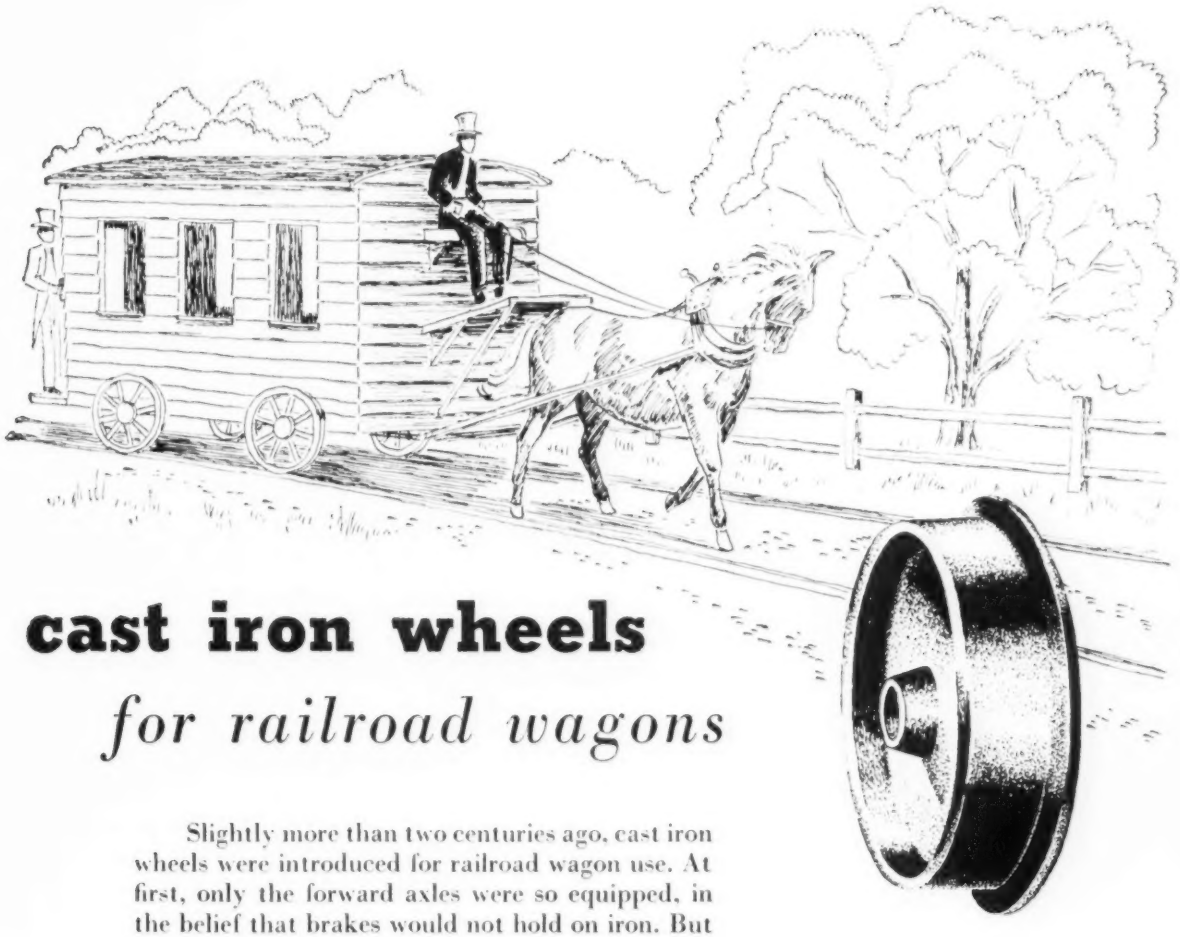
No. 1 hvy. melting	$47.00
No. 2 hvy. melting	45.00
No. 1 dealer bundles	45.00
No. 2 bundles	35.00
Machine shop turn.	30.00
Shoveling turnings	32.00
Cast iron borings	32.00
Elec. furn. 1 ft and under (foundry)	58.00
No. 1 RR. hvy. melting	47.00
No. 1 cupola cast.	$50.00 to 51.00

Seattle

No. 1 hvy. melting	$47.00
No. 2 hvy. melting	$43.00 to 45.00
No. 2 bundles	33.00
No. 1 cupola cast.	46.00
Mixed yard cast.	47.00

Hamilton, Ont.

No. 1 hvy. melting	$50.00
No. 2 hvy. melting	45.00
No. 1 dealer bundles	50.00
No. 2 bundles	39.00
Mixed steel scrap	42.00
Busheling	36.00
Bush., new fact., prep'd	50.00
Bush., new fact., unprep'd	44.00
Machine shop turn.	23.00
Short steel turn.	30.00
Mixed bor. and turn.	24.00
Rails rerolling	56.00
Cast scrap	52.00



cast iron wheels

for railroad wagons

Slightly more than two centuries ago, cast iron wheels were introduced for railroad wagon use. At first, only the forward axles were so equipped, in the belief that brakes would not hold on iron. But this theory was soon disproved—and cast iron was adopted for both rear and front wheels.

Now, on the country's rails and highways, wheels of iron or steel transport a vast tonnage of industrial and agricultural products—the vital needs for civilian and military use. To meet the ever-increasing demand for wheels, the supply of scrap must be constantly maintained.

For the purchase or sale of iron or steel scrap . . .

phone or write "Your Chicago Broker"

M.S. KAPLAN COMPANY

231 S. La Salle St., Chicago

Telephone ANdover 3-3900

Copper Price Falls, Market Still Weak

Big 3 copper producers drop their price to 28.50¢.

Custom smelters in no hurry to lower their price. Consensus is that lower price won't improve business.

▪ The price of producers' copper is now at its lowest point since 1953. Phelps Dodge and Kennecott dropped their prices ¾¢ per lb. to 28.50¢. Two days later Anaconda made it unanimous.

Major brass and wire mills followed suit almost immediately, with new prices correspondingly lower according to copper content.

Smelters in No Hurry—Thus far, custom smelters have held their price at 28.25¢ per lb. Most agree, privately, that a lower price is imminent. No business is being attracted at current levels. But they are in no hurry. The reason: No one feels the lower price would stimulate buying.

Here's the situation as the industry sees it: Consumers' inventories of finished products are high, inventories of raw materials are low. Fabricators' customers are pressing for immediate deliveries. Fabricators in turn are working hand-to-mouth, buying only as much copper as they need, and getting immediate delivery on it.

Business Levels Are Key—Prospects are that this situation will continue, despite a lower price, as long as there is enough copper around to permit immediate delivery, and as long as business conditions remain about the same.

Smelters feel the key to improved buying is general business activity not price. When demand starts depleting the fabricators' inventories of finished products, copper buying will pick up almost immediately.

Market Very Weak—The current market is considered weaker than normal at this time of the year. Sales are spotty, with slight, insignificant flurries of buying about every month. A few people point out that August has been better than July, expect the turning point to be in September. But most feel it will be October at least before any upturn will be felt at smelter and producer levels.

Aluminum

Aluminum may no longer be taken in trade under the barter program for surplus U. S. farm products. The Office of Defense Mobilization, with more aluminum now than it knows what to do with, said the move was made after a re-examination of the need for additional aluminum in the light of current domestic supply.

Actually, this merely closes the door before any got in. The last report from the Dept. of Agriculture on the barter program indicated that no aluminum had been taken in trade for surplus farm products in 1956 or 1957.

New Alcoa Product—Aluminum Co. of America is now in the foamed-plastic insulated panel business. A new process sandwiches a foamed-plastic between sheets of aluminum, mill finished, with a special finish, or laminated to plywood, plasterboard or any of several other materials.

The panels are fabricated on continuous bonding facilities, so lengths are limited only by size of handling and packing equipment. Initially, widths will range up to 48 in., thickness to 6 in.

Zinc

Shipments of slab zinc from U. S. smelters were up in July over the previous month. But so were stocks at the smelters, according to the American Zinc Institute.

Production hit its lowest point of the year, as did unfilled orders.

(short tons)	July 1957	June 1957
Production	85,744	90,719
Shipments	73,046	69,957
Stocks at Month End	146,153	133,455
Unfilled Orders	28,296	28,822

Tin

According to a major tin trader in New York, average stocks of pig tin held by U. S. industry continue to grow. Average U. S. consumer now maintains about a 3½ month stock, compared to 2¾ months in 1956, and 2½ months at this time in 1955.

Tin prices for the week: Aug. 7—94.75; Aug. 8—94.50; Aug. 9—94.50; Aug. 12—94.375; Aug. 13—94.375.

* Estimate.

Primary Prices

(cents per lb)	Current price	last price	date of change
Aluminum ingot	28.10	27.10	8 1 57
Aluminum pig	26.00	25.00	8 1 57
Copper (E)	28.50	29.25	8 6 57
Copper (CS)	28.25	28.50	7 22 57
Copper (L)	28.50	29.25	8 8 57
Lead, St. L.	13.80	14.80	6 11 57
Lead, N. Y.	14.00	15.50	6 11 57
Magnesium ingot	36.00	34.00	8 13 56
Magnesium pig	35.25	33.75	8 13 56
Nickel	74.00	64.50	12 6 56
Titanium sponge	200-250	250-275	6 6 57
Zinc, E. St. L.	10.00	10.50	7 1 57
Zinc, N. Y.	10.50	11.00	7 1 57

ALUMINUM: 99% ingot frt allwd. COPPER: (E) = electrolytic, (CS) = custom smelters, electrolytic. (L) = lake. LEAD: common grade. MAGNESIUM: 99.8% pig Velasco, Tex. NICKEL: Port Colbourne, Canada. ZINC: prime western. TIN: see above; other primary prices, pg. 154.

Anaconda Aluminum Coiled Sheet

ALUMINUM COILED SHEET produced to the high standards of quality and uniformity maintained by The American Brass Company is now available for prompt shipment from our Torrington Division to all points in the United States.

It is rolled on the most modern, high-speed equipment, X-ray controlled to close tolerance in gage. High-speed, electronically operated slitters give exact widths with clean edges on evenly and tightly wound coils. Latest annealing furnaces—with controlled atmosphere and temperature—provide high uniformity of metal structure to meet specified mechanical-property limits.

IN THESE WIDTHS: Maximum 28 inches
Minimum $\frac{3}{8}$ inch

IN THESE THICKNESSES: Maximum 0.064 inch
Minimum .006 inch

COIL WEIGHTS: Up to 100 lb. per inch of width

ARBOR SIZES: 4, 6, 8, 10, 12, 16, and 20 inches in diameter

ALLOYS: 1100, 3003, 3004, 5005, 5050, 5052

TEMPERS: Alloy Nos. 1100, 3003, 5005
—O, —H12, —H14, —H16, —H18
Alloy Nos. 3004, 5005, 5050, 5052
—O, —H32, —H34, —H36, —H38

FOR IMMEDIATE ACTION, call The American Brass Company Office nearest you. The American Brass Company, Waterbury 20, Conn. 3704

ANACONDA®
ALUMINUM COILED SHEET
Made by The American Brass Company

NONFERROUS PRICES *(Effective Aug. 13, 1957)*

MILL PRODUCTS

(Cents per lb unless otherwise noted)

ALUMINUM

(Base 30,000 lb, f.o.b. ship pt., frt. allowed)

Flat Sheet (Mill Finish) and Plate

("F" temper except 6061-0)

Alloy	.032	.081	136-249	250-3
1100, 3003	46.6	44.3	43.6	42.7
5052	54.0	48.9	47.2	45.4
6061-0	51.4	47.0	45.2	45.1

Extruded Solid Shapes

Factor	6063 T-5	6062 T-6
6-8	45.0-46.8	60.4-64.1
12-14	45.7-47.2	61.3-65.8
24-26	49.0-49.5	72.1-76.8
36-38	58.0-58.6	96.2-99.8

Screw Machine Stock—2011-T-3

Size"	¼	⅜-⅝	¾-1	1¼-1½
Price	63.0	62.5	61.0	58.6

Roofing Sheet, Corrugated

(Per sheet, 26" wide base, 16,000 lb)

Length"→	72	96	120	144
.019 gage	$1 420	$1 893	$2 367	$2 839
.024 gage	1 774	2 366	2 957	3 549

MAGNESIUM

(F.o.b. shipping Pt., carload frt. allowed)

Sheet and Plate

Type↓ Gage→	.250-3.00	.250-2.00	.188	.081	.032
AZ31B Stand. Grade		67.9	69.0	77.9	108.1
AZ31B Spec.		93.3	95.7	108.7	171.3
Tread Plate		70.6	71.7		
Tooling Plate	73.0				

Extruded Shapes

factor→	6-8	12-14	24-26	36-38
Comm. Grade (AZ31C)	69.6	70.7	75.6	89.2
Spec. Grade (AZ31B)	84.6	85.7	90.6	104.2

Alloy Ingot

AZ91B (Die Casting) 37.25 (delivered)
AZ63A, AZ92A, AZ91C (Sand Casting) 40.75 (Velasco, Tex.)

NICKEL, MONEL, INCONEL

(Base prices, f.o.b. mill)

	"A" Nickel	Monel	Inconel
Sheet, CR	126	106	**128**
Strip, CR	124	108	**128**
Rod, bar, HR	107	89	**109**
Angles, HR	107	89	**109**
Plates, HR	120	105	**121**
Seamless tube	157	129	**200**
Shot, blocks		87	

COPPER, BRASS, BRONZE

(Freight included on 5000 lbs)

	Sheet	Wire	Rod	Tube
Copper	50.63		47.86	50.82
Brass, 70/30	44.02	44.56	45.34	46.93
Brass, Low	46.70	47.24	46.64	49.51
Brass, R.L.	47.64	48.18	47.58	50.45
Brass, Naval	48.19		42.50	51.60
Muntz Metal	46.29		42.10	
Comm. Bz.	49.15	49.67	49.07	51.69
Mang. Bz.	51.93		46.03	
Phos. Bz. 5%	69.61	70.11	70.11	

Free Cutting Brass Rod 32.23

TITANIUM

(10,000 lb base, f.o.b. mill)

Sheet and strip, commercially pure, $9.50-$10.60; alloy, $14.75; Plate, HR, commercially pure, $8.00-$8.75; alloy, $10.75. Wire, rolled and/or drawn, commercially pure, $7.50-$8.00; alloy, $10.00; Bar, HR or forged, commercially pure, $6.15-$6.40; alloy, $6.15-$6.35; billets, HR, commercially pure, $6.00-$6.25; alloy, $6.00-$6.20.

PRIMARY METAL

(Cents per lb, unless otherwise noted)

Antimony, American, Laredo, Tex... 33.50
Beryllium aluminum 5% Be, Dollar per lb contained Be $74.75
Beryllium copper, per lb conta'd Be. $43.00
Beryllium 97% lump or beads, f.o.b. Cleveland, Reading $71.50
Bismuth, ton lots ..... $ 2.25
Cadmium, del'd ..... $ 1.70
Calcium, 99.9%, small lots ..... $ 4.55
Chromium, 99.8% metallic basis.... $ 1.31
Cobalt, 97-99% (per lb).... $2.00 to $2.07
Germanium, per gm, f.o.b. Miami, Okla., refined 39.50-53.50
Gold, U. S. Treas., per troy oz..... $35.00
Indium, 99.9%, dollars per troy oz... $ 2.25
Iridium, dollars per troy oz.... $86 to $89
Lithium, 98% ..... $11.00 to $14.00
Magnesium, sticks, 100 to 500 lb.... 59.00
Mercury, dollars per 76-lb flask, f.o.b. New York ..... $252 to $255
Nickel oxide sinter at Copper Cliff, Ont., contained nickel 71.25
Palladium, dollars per troy oz... $23 to $24
Platinum, dollars per troy oz.... $84 to $87
Rhodium ..... $120.00 to $125.00
Silver ingots (¢ per troy oz.) 91.125
Thorium, per kg. $43.00
Uranium, normal per kg. $40.00
Vanadium ..... $ 3.45
Zirconium sponge $10.00

REMELTED METALS

Brass Ingot

(Cents per lb delivered, carloads)

85-5-5 ingot
No. 115 ..... 29.50
No. 120 ..... 28.50
No. 123 ..... 27.00
80-10-10 ingot
No. 305 ..... 33.50
No. 315 ..... 31.50
88-10-2 ingot
No. 210 ..... 41.25
No. 215 ..... 37.50
No. 245 ..... 33.50
Yellow ingot
No. 405 ..... 24.00
Manganese bronze
No. 421 ..... 27.00

Aluminum Ingot

(Cents per lb del'd 30,000 lb and over)

95-5 aluminum-silicon alloys
0.30 copper max. 26.25-27.00
0.60 copper max. 26.00-26.50
Piston alloys (No. 122 type).. 24.25-25.00
No. 12 alum. (No. 2 grade)..... 22.75-23.50
108 alloy 23.25-24.00
195 alloy 25.75-26.75
13 alloy (0.60 copper max.)... 26.00-26.50
AXS-679 ..... 23.25-24.00

Steel deoxidizing aluminum, notch bar granulated or shot

Grade 1—95-97½% 24.50-25.50
Grade 2—92-95% 22.75-23.50
Grade 3—90-92% 21.75-22.50
Grade 4—85-90% 20.75-21.50

SCRAP METALS

Brass Mill Scrap

(Cents per pound, add 1¢ per lb for shipments of 20,000 lb and over)

	Heavy	Turnings
Copper	25⅛	24½
Yellow brass	19⅛	17⅝
Red brass	22⅛	21½
Comm. bronze	23⅛	22⅝
Mang. bronze	17⅝	16⅞
Yellow brass rod ends	18⅞	

Customs Smelters Scrap

(Cents per pound carload lots, delivered to refinery)

No. 1 copper wire 23½
No. 2 copper wire 22
Light copper 19¾
*Refinery brass 21½
Copper bearing material 20½
*Dry copper content.

Ingot Makers Scrap

(Cents per pound carload lots, delivered to refinery)

No. 1 copper wire 23½
No. 2 copper wire 22
Light copper 19¾
No. 1 composition 22
No. 1 comp. turnings 21½
Hvy. yellow brass solids 16
Brass pipe 18½
Radiators 17
Aluminum
Mixed old cast. ..... 14 —14½
Mixed new clips ..... 16 —16½
Mixed turnings, dry ..... 15 —15½

Dealers' Scrap

(Dealers' buying price f.o.b. New York in cents per pound)

Copper and Brass

No. 1 copper wire ..... 21 —21½
No. 2 copper wire ..... 19½—20
Light Copper ..... 17½—18
Auto radiators (unsweated).. 13½—14
No. 1 composition ..... 18½—19
No. 1 composition turnings... 18 —18½
Cocks and faucets ..... 14½—15
Clean heavy yellow brass .... 12½—13
Brass pipe ..... 15½—16
New soft brass clippings .... 17 —17½
No. 1 brass rod turnings .... 14¼—14¾

Aluminum

Alum. pistons and struts .... 5½— 6
Aluminum crankcases ..... 11 —11½
1100 (2S) aluminum clippings 14 —14½
Old sheet and utensils ..... 11 —11½
Borings and turnings ..... 7 — 7½
Industrial castings ..... 11 —11½
2024 (24S) Clippings ..... 12½—13

Zinc

New zinc clippings ..... 4 — 4½
Old zinc ..... 3 — 3¼
Zinc routings ..... 1¾— 2
Old die cast scrap ..... 1½— 1¾

Nickel and Monel

Pure nickel clippings 85-90
Clean nickel turnings 70-75
Nickel anodes 85-90
Nickel rod ends 85-90
New Monel clippings 45-48
Clean Monel turnings 35-40
Old sheet Monel 44-45
Nickel silver clippings, mixed. 21
Nickel silver turnings, mixed. 18

Lead

Soft scrap lead ..... 9½—10
Battery plates (dry) ..... 4¼— 4½
Batteries, acid free ..... 2¾— 3

Miscellaneous

Block tin ..... 75 —76
No. 1 pewter ..... 59 —60
Auto babbitt ..... 39 —40
Mixed common babbitt ..... 11 —11½
Solder joints ..... 15½—16
Siphon tops 42
Small foundry type ..... 13 —13¼
Monotype ..... 13 —13¼
Lino. and stereotype ..... 12 —12¼
Electrotype ..... 11 —11¼
Hand picked type shells ..... 8 — 8½
Lino. and stereo. dross ..... 3¾— 4
Electro. dross ..... 3 — 3¼

STEEL PRICES

(Effective Aug. 13, 1957)

Italics identify producers listed in key at end of table. Base prices, f.o.b. mill, in cents per lb., unless otherwise noted. Extras apply.

		BILLETS, BLOOMS, SLABS			PILING	SHAPES STRUCTURALS			STRIP					
		Carbon Rerolling Net Ton	Carbon Forging Net Ton	Alloy Net Ton	Sheet Steel	Carbon	Hi Str. Low Alloy	Carbon Wide-Flange	Hot-rolled	Cold rolled	Hi Str. H.R. Low Alloy	Hi Str. C.R. Low Alloy	Alloy Hot-rolled	Alloy Cold-rolled
EAST	Bethlehem, Pa.			114.00 *B3*		5.325 *B3*	7.80 *B3*	5.325 *B3*						
	Buffalo, N. Y.	77.50 *R3, B3*	96.00 *R3, B3*	114.00 *R3, B3*	6.225 *B3*	5.325 *B3*	7.80 *B3*	5.325 *B3*	4.925 *R3, B3*	7.15 *R7*	7.325 *B3*			
	Phila., Pa.									7.70 *P15*				15.05 *C11*
	Harrison, N. J.													
	Conshohocken, Pa.		101.00 *A2*	121.00 *A2*					4.975 *A2*	7.20 *A2*	7.325 *A2*			
	New Bedford, Mass.									7.60 *R6*				
	Johnstown, Pa.	77.50 *B3*	96.00 *B3*	114.00 *B3*		5.325 *B3*	7.80 *B3*							
	Boston, Mass.									7.70 *T8*				15.40 *T8*
	New Haven, Conn.									7.60 *D1*				
	Baltimore, Md.									7.15 *T8*				15.05 *T8*
	Phoenixville, Pa.					5.50 *P2*		5.50 *P2*						
	Sparrows Pt., Md.								4.925 *B3*		7.325 *B3*			
	Bridgeport, Wallingford, Conn.	80.50 *N8*	101.00 *N8*	114.00 *N8*						7.60 *W1*				
	Pawtucket, R. I. Worcester, Mass.									7.70 *N7* 7.70 *A5*				15.40 *N7* 15.20 *T8*
MIDDLE WEST	Alton, Ill.								5.125 *L1*					
	Ashland, Ky.								4.925 *A7*					
	Canton-Massillon, Dover Ohio		96.00 *R3*	114.00 *R3, T5*						7.15 *G4*		10.40 *G4*		14.95 *C11*
	Chicago, Ill. Franklin Park, Ill. Evanston, Ill.	77.50 *U1, R3*	96.00 *U1, R3, W8*	114.00 *U1, R3, W8*	6.225 *U1*	5.275 *U1, W8, P13*	7.75 *U1, Y1* 6.525 *W8*	5.275 *U1*	4.925 *W8, N4, A1*	7.25 *A1, T8, M8*			8.10 *W8, S9, I3*	15.05 *A1, S9, G4*
	Cleveland, Ohio									7.15 *A5, J3*			8.10 *J3*	
	Detroit, Mich.			114.00 *R5*					5.025 *G3, M2*	7.25 *M2 D1 D2 G3, P11*	7.425 *G3*	10.60 *G3, D2*	8.10 *G3*	
	Anderson, Ind.									7.15 *G4*		10.40 *G4*		
	Duluth, Minn.													
	Gary, Ind. Harbor, Indiana	77.50 *U1*	96.00 *U1*	114.00 *U1, Y1*	6.225 *I3*	5.275 *U1*	7.75 *U1, I3*	5.25 *I3*	4.925 *U1, I3, Y1*	7.15 *Y1*	7.325 *U1, I3, Y1*	10.50 *Y1*	8.10 *U1, Y1*	
	Sterling, Ill.	77.50 *N4*				5.275 *N4*			5.025 *N4*					
	Indianapolis, Ind.									7.30 *J3*				15.20 *J3*
	Newport, Ky.												8.10 *A9*	
	Middletown, Ohio													
	Niles, Warren, Ohio Sharon, Pa.		96.00 *S1, C10*	114.00 *C10, S1*					4.925 *R3, S1*	7.15 *R3, T4 S1*	7.325 *R3, S1*	10.30 *S1, R3*	8.10 *S1*	15.05 *S1*
	Pittsburgh, Pa. Midland, Pa. Butler, Pa. Aliquippa, Pa.	77.50 *U1, P6*	96.00 *U1, C11, P6*	114.00 *U1, C11*	6.225 *U1*	5.275 *U1, J3*	7.75 *U1, J3*	5.275 *U1*	4.925 *P6*	7.15 *J3, B4, S7*			8.10 *S9*	15.05 *S9*
	Weirton, Wheeling, Follansbee, W. Va.					5.275 *W3*			4.925 *W3*	7.15 *W3, F3*	7.325 *W3*	10.45 *W3*		
	Youngstown, Ohio	77.50 *R3*	96.00 *Y1, C10*	114.00 *Y1*		5.425 *Y1*	7.75 *Y1*			7.15 *R3, Y1, J3*	7.325 *U1, Y1*	10.50 *Y1*	8.10 *U1, Y1*	15.05 *J3*
WEST	Fontana, Cal.	88.00 *K1*	105.50 *K1*	135.00 *K1*		6.025 *K1*	8.50 *K1*	6.225 *K1*	5.775 *K1*	9.00 *K1*				
	Geneva, Utah		96.00 *C7*			5.275 *C7*	7.75 *C7*							
	Kansas City, Mo.					5.375 *S2*	7.85 *S2*		5.175 *S2*		7.575 *S2*		8.35 *S2*	
	Los Angeles, Torrance, Cal.		105.50 *B2*	134.00 *B2*		5.975 *C7, B2*	8.45 *B2*		5.675 *C7, B2*				9.30 *B2*	
	Minnequa, Colo.					5.575 *C6*			6.025 *C6*	9.10 *K1*				
	Portland, Ore.					6.025 *O2*								
	San Francisco, Niles, Pittsburg, Cal.		105.50 *B2*			5.925 *B2*	8.40 *B2*		5.675 *C7, B2*					
	Seattle, Wash.		109.50 *B2*			6.025 *B2*	8.50 *B2*		5.925 *B2*					
SOUTH	Atlanta, Ga					5.475 *A8*			5.125 *A8*					
	Fairfield, Ala. City, Birmingham, Ala.	77.50 *T2*	96.00 *T2*			5.275 *T2, R3, C16*	7.75 *T2*		4.925 *T2, R3, C16* 5.225 *C10*		7.325 *T2*			
	Houston, Lone Star, Texas		101.00 *S2*	119.00 *S2*		5.375 *S2*	7.85 *S2*		5.175 *S2*		7.575 *S2*		8.35 *S2*	

STEEL PRICES

(Effective Aug. 13, 1957)

Italics identify producers listed in key at end of table. Base prices, f.o.b. mill, in cents per lb., unless otherwise noted. Extras apply.

		SHEETS									WIRE ROD	TINPLATE†		BLACK PLATE
		Hot-rolled 18 ga. & hvyr.	Cold-rolled	Galvanized	Enameling	Long Terne	Hi Str. Low Alloy H.R.	Hi Str. Low Alloy C.R.	Hi Str. Low Alloy Galv.	Hot-rolled 19 ga.		Coke* 1.25-lb. base box	Electro* 0.25-lb. base box	Hollowware Enameling 29 ga.
EAST	Bethlehem, Pa.													
	Buffalo, N. Y.	4.925 *B3*	6.05 *B3*				7.275 *B3*	8.975 *B3*			6.15 *W6*	† Special coated mfg. terne deduct 50¢ from 1.25-lb. coke base box price. Can-making quality blackplate 55 to 128 lb. deduct $2.20 from 1.25 lb. coke base box. * COKES: 1.50-lb. add 25¢. ELECTRO: 0.50-lb. add 25¢; 0.75-lb. add 65¢; 1.00-lb. add $1.00. Differential 1.00 lb./0.25 lb. add 65¢.		
	Claymont, Del.													
	Conteaville, Pa.													
	Conshohocken, Pa.	4.975 *A2*	6.10 *A2*				7.325 *A2*							
	Harrisburg, Pa.													
	Hartford, Conn.													
	Johnstown, Pa.										6.15 *B3*			
	Fairless, Pa.	4.975 *U1*	6.10 *U1*				7.325 *U1*	9.025 *U1*				$10.15 *U1*	$8.95 *U1*	
	New Haven, Conn.													
	Phoenixville, Pa.													
	Sparrows Pt., Md.	4.925 *B3*	6.05 *B3*	6.60 *B3*			7.275 *B3*	8.975 *B3*	9.725 *B3*		6.25 *B3*	$10.15 *B3*	$5.85 *B3*	
	Worcester, Mass.										6.45 *A5*			
	Trenton, N. J.													
MIDDLE WEST	Alton, Ill.										6.35 *L1*			
	Ashland, Ky.	4.925 *A7*		6.60 *A7*	6.625 *A7*									
	Canton-Massillon, Dover, Ohio			6.60 *R3, R1*										
	Chicago, Joliet, Ill.	4.925 *W8, A1*					7.275 *U1*				6.15 *A5, R3, W8, N4, K2*			
	Sterling, Ill.										6.25 *N4, K2*			
	Cleveland, Ohio	4.925 *R3, J3*	6.05 *R3, J3*		6.625 *R3*		7.275 *R3 J3*	8.975 *R3, J3*			6.15 *A5*			
	Detroit, Mich.	5.025 *G3, M2*	6.15 *G3* 6.05 *M2*				7.375 *G2*	9.075 *G3*						
	Newport, Ky.	4.925 *A1*	6.05 *A1*											
	Gary, Ind. Harbor, Indiana	4.925 *U1, I3, Y1*	6.05 *U1, I3, Y1*	6.60 *U1, I3*	6.625 *U1, I3, Y1*	7.00 *U1*	7.275 *U1, Y1, I3*	8.975 *U1, Y1*			6.15 *Y1*	$10.05 *U1, Y1*	$8.75 *I3, U1, Y1*	7.50 *U1, Y1*
	Granite City, Ill.	5.125 *G2*	6.25 *G2*	6.80 *G2*	6.825 *G2*								$8.85 *G2*	7.60 *G2*
	Kokomo, Ind.			6.70 *C9*							6.25 *C9*			
	Mansfield, Ohio		6.05 *E2*			7.00 *E2*								
	Middletown, Ohio		6.05 *A7*	6.60 *A7*	6.625 *A7*	7.00 *A7*								
	Niles, Warren, Ohio Sharon, Pa.	4.925 *R3, N3, S1*	6.05 *R3*	6.60 *R3*	6.625 *N3, S1*	7.00 *N3, S1*	7.275 *R3*	8.975 *S1, R3*					$8.75 *R3*	
	Pittsburgh, Pa. Midland, Pa. Butler, Pa. Donora, Pa. Aliquippa, Pa.	4.925 *U1, J3, P6*	6.05 *U1, J3, P6*	6.60 *U1, J3*	6.625 *U1*		7.275 *U1, R3, J3*	8.975 *U1, J3*	9.725 *U1*		6.15 *A5, J3, P6*	$10.05 *U1, J3*	$8.75 *U1, J3*	7.50 *U1, J3*
	Portsmouth, Ohio	4.925 *P7*	6.05 *P7*								6.15 *P7*			
	Weirton, Wheeling, Follansbee, W. Va.	4.925 *W3, W5*	6.05 *W3, F3, W5*	6.60 *W3, W5*		7.00 *W3, W5*	7.275 *W3*	8.975 *W3*				$10.05 *W5, W3*	$8.75 *W5, W3*	7.50 *W5*
	Youngstown, Ohio	4.925 *U1, Y1*	6.05 *Y1*		6.625 *Y1*		7.275 *Y1*	8.975 *Y1*			6.15 *Y1*			
WEST	Fontana, Cal.	5.775 *K1*	7.30 *K1*				8.125 *K1*	10.275 *K1*				$10.80 *K1*	$9.50 *K1*	
	Geneva, Utah	5.025 *C7*												
	Kansas City, Mo.										6.40 *S2*			
	Los Angeles, Torrance, Cal.										6.95 *B2*			
	Minnequa, Colo.										6.40 *C6*			
	San Francisco, Niles, Pittsburg, Cal.	5.625 *C7*	7.00 *C7*	7.35 *C7*							6.95 *C7*	$10.80 *C7*	$9.50 *C7*	
	Seattle, Wash.													
SOUTH	Atlanta, Ga.													
	Fairfield, Ala. Alabama City, Ala.	4.925 *T2, R3*	6.05 *T2*	6.60 *T2, R3*							6.15 *T2, R3*	$10.15 *T2*	$8.85 *T2*	
	Houston, Tex.										6.40 *S2*			

STEEL PRICES

(Effective Aug. 13, 1957)

Italics identify producers listed in key at end of table. Base prices, f.o.b. mill, in cents per lb., unless otherwise noted. Extras apply.

		BARS						PLATES				WIRE
		Carbon† Steel	Reinforcing	Cold Finished	Alloy Hot rolled	Alloy Cold Drawn	Hi Str. H.R. Low Alloy	Carbon Steel	Floor Plate	Alloy	Hi Str. Low Alloy	Mfr's. Bright
EAST	Bethlehem, Pa.				6.475 *B3*	8.775 *B3*	7.925 *B3*					
	Buffalo, N. Y.	5.425 *R3,B3*	5.425 *R3,B3*	7.30 *R3*, 7.35 *B5*	6.475 *B3,R3*	8.775 *B3,B5*	7.925 *B3*	5.10 *B3*		7.20 *B2*	7.625 *B2*	7.65 *W6*
	Claymont, Del.							5.70 *P2*		7.20 *C4*	7.625 *C4*	
	Coatesville, Pa.							5.50 *L4*		7.20 *L4*	7.925 *L4*	
	Conshohocken, Pa.							5.20 *A2*	6.175 *A2*	7.20 *A2*	7.625 *A2*	
	Harrisburg, Pa.							5.80 *P2*	6.275 *P2*			
	Milton, Pa.	5.575 *M7*	5.575 *M7*									
	Hartford, Conn.			7.90 *R3*		9.075 *R3*	7.925 *B3*					
	Johnstown, Pa.	5.425 *B3*	5.425 *B3*		6.475 *B3*			5.10 *B3*		7.20 *B3*	7.625 *B3*	7.65 *B3*
	Fairless, Pa.	5.575 *U1*	5.575 *U1*		6.625 *U1*							
	Newark, N. J. Camden, N. J.			7.75 *W10* 7.75 *P10*		8.95 *W10* 8.95 *P10*						
	Bridgeport, Conn. Putnam, Conn. Willimantic, Conn.	5.650 *N8*	5.650 *N8*	7.65 *N8* 7.85 *W10* 7.80 *J3*	6.550 *N8*	8.925 *N8*						
	Sparrows Pt., Md.		5.425 *B3*					5.10 *B3*		7.20 *B3*	7.625 *B3*	7.75 *B3*
	Palmer, Worcester, Readville, Mass. Mansfield, Mass.			7.85 *B5,C14*		9.075 *A5,B5*						7.95 *A5, W6*
	Spring City, Pa.			7.75 *K4*		8.950 *K4*						
MIDDLE WEST	Alton, Ill.	5.625 *L1*										7.85 *L1*
	Ashland, Newport, Ky.							5.10 *A7,A1*		7.20 *A1*		
	Canton, Massillon, Ohio			7.30 *R3,R2*	6.475 *R3,T5*	8.775 *R3,R2, T5*						
	Chicago, Joliet, Waukegan, Ill. Harvey, Ill.	5.425 *U1,R3, W8,N4,P13*	5.425 *U1,R3, N4,P13*	7.30 *A5, W10,W8, B5,L2,N9*	6.475 *U1,R3, W8*	8.775 *A5, W10,W8 L2,N9,B5*	7.925 *U1* 6.675 *W8*	5.10 *U1,A1, W8,I3*	6.175 *U1*	7.20 *U1,W8*	7.625 *U1* 7.40 *W8*	7.65 *A5,R3, W8,N4, K2,W7*
	Cleveland, Ohio	5.425 *R3*	5.425 *R3*	7.30 *A5,C13*		8.775 *A5, C13*	7.925 *R3*	5.20 *R3,J3*	6.175 *J3*		7.625 *R3, J3*	7.65 *A5, C13*
	Detroit, Mich.	5.525 *G3*	5.775 *G3*	7.55 *P3* 7.50 *P8,B5*	6.475 *R5* 6.575 *G3*	8.775 *R5* 8.975 *B5,P3, P8*	8.025 *G3*	5.20 *G3*		7.35 *G3*		
	Duluth, Minn.											7.65 *A5*
	Gary, Ind. Harbor, Crawfordsville Hammond, Ind.	5.425 *U1,I3, Y1*	5.425 *U1,I3, Y1*	7.30 *R3,M5, J3*	6.475 *U1,I3, Y1*	8.775 *R3,M4*	7.925 *U1,I3, Y1*	5.10 *U1,I3, Y1*	6.175 *J3,I3*	7.20 *U1,Y1*	7.625 *U1, Y1*	7.75 *M4*
	Granite City, Ill.							5.30 *C2*				
	Kokomo, Ind.											7.75 *C9*
	Sterling, Ill.	5.525 *N4*	5.525 *N4*					5.10 *N4*				7.75 *K2*
	Niles, Warren, Ohio Sharon, Pa.			7.30 *C10*	6.475 *C10,S1*	8.775 *C10*	7.925 *S1*	5.10 *R3,S1*		7.20 *S1*	7.625 *R3, S1*	
	Pittsburgh, Midland, Donora, Aliquippa, Pa.	5.425 *U1,J3*	5.425 *U1,J3*	7.30 *A5,B4, R3,J3,C11, W10,S9,C8*	6.475 *U1,J3, C11*	8.775 *A5, W10,R3,S9, C11,C8*	7.925 *U1,J3*	5.10 *U1,J3*	6.175 *U1*	7.20 *U1,J3*	7.625 *U1,J3*	7.65 *A5, J3,P6*
	Portsmouth, Ohio											7.65 *P7*
	Weirton, Wheeling, Follansbee, W. Va.							5.10 *W5*				
	Youngstown, Ohio	5.425 *U1,R3, Y1*	5.425 *U1,R3, Y1*	7.30 *A5,Y1, F2*	6.475 *U1,Y1*	8.775 *Y1,F2*	7.925 *U1,Y1*	5.10 *U1,R3, Y1*		7.20 *Y1*	7.625 *U1, R3,Y1*	7.65 *Y1*
WEST	Emeryville, Cal. Fontana, Cal.	6.175 *J5* 6.125 *K1*	6.175 *J5* 6.125 *K1*		7.525 *K1*		8.625 *K1*	5.85 *K1*		7.95 *K1*	8.375 *K1*	
	Geneva, Utah							5.10 *C7*			7.625 *C7*	
	Kansas City, Mo.	5.675 *S2*	5.675 *S2*		6.725 *S2*		8.175 *S2*					7.90 *S2*
	Los Angeles, Torrance, Cal	6.125 *C7,B2*	6.125 *C7,B2*	8.75 *R3,P14*	7.525 *B2*	10.65 *P14*	8.625 *B2*					8.60 *B2*
	Minnequa, Colo.	5.875 *C6*	5.875 *C6*					5.95 *C6*				7.90 *C6*
	Portland, Ore.	6.175 *O2*	6.175 *O2*									
	San Francisco, Niles, Pittsburg, Cal.	6.125 *C7* 6.175 *B2*	6.125 *C7* 6.175 *B2*				8.675 *B2*					8.60 *C7,C6*
	Seattle, Wash.	6.175 *B2,N6*	6.175 *B2*				9.675 *B2*	6.00 *B2*		8.10 *B2*	8.525 *B2*	
SOUTH	Atlanta, Ga.	5.625 *A8*	5.625 *A8*									7.85 *A8*
	Fairfield, Ala. City, Birmingham, Ala.	5.425 *T2,R3 C16*	5.425 *T2,R3, C16*	7.90 *C16*		8.775 *R3*	7.925 *T2*	5.10 *T2,R3*			7.625 *T2*	7.65 *T2,R3*
	Houston, Ft. Worth, Lone Star, Tex.	5.675 *S2*	5.675 *S2*		6.725 *S2*		8.175 *S2*	5.20 *S2* 5.45 *L3*		7.30 *S2*	7.725 *S2*	7.90 *S2*

† Merchant Quality—Special Quality .35¢ higher.

STEEL PRICES (Effective Aug. 14, 1957)

Key to Steel Producers

With Principal Offices

A1 Acme Steel Co., Chicago
A2 Alan Wood Steel Co., Conshohocken, Pa.
A3 Allegheny Ludlum Steel Corp., Pittsburgh
A4 American Cladmetals Co., Carnegie, Pa.
A5 American Steel & Wire Div., Cleveland
A6 Angel Nail & Chaplet Co., Cleveland
A7 Armco Steel Corp., Middletown, Ohio
A8 Atlantic Steel Co., Atlanta, Ga.
A9 Acme-Newport Steel Co., Newport, Ky.

B1 Babcock & Wilcox Tube Div., Beaver Falls, Pa.
B2 Bethlehem Pacific Coast Steel Corp., San Francisco
B3 Bethlehem Steel Co., Bethlehem, Pa.
B4 Blair Strip Steel Co., New Castle, Pa.
B5 Bliss & Laughlin, Inc., Harvey, Ill.
B6 Brook Plant, Wickwire Spencer Steel Div., Birdsboro, Pa.

C1 Calstrip Steel Corp., Los Angeles
C2 Carpenter Steel Co., Reading, Pa.
C3 Central Iron & Steel Co., Harrisburg, Pa.
C4 Claymont Products Dept., Claymont, Del.
C6 Colorado Fuel & Iron Corp., Denver
C7 Columbia Geneva Steel Div., San Francisco
C8 Columbia Steel & Shafting Co., Pittsburgh
C9 Continental Steel Corp., Kokomo, Ind.
C10 Copperweld Steel Co., Pittsburgh, Pa.
C11 Crucible Steel Co. of America, Pittsburgh
C12 Cumberland Steel Co., Cumberland, Md.
C13 Cuyahoga Steel & Wire Co., Cleveland
C14 Compressed Steel Shafting Co., Readville, Mass
C15 G. O. Carlson, Inc., Thorndale, Pa.
C16 Connors Steel Div., Birmingham
C17 Chester Blast Furnace, Inc., Chester, Pa.

D1 Detroit Steel Corp., Detroit
D2 Dearborn Div., Sharon Steel Corp.
D3 Driver Harris Co., Harrison, N. J.
D4 Dickson Weatherproof Nail Co., Evanston, Ill.

E1 Eastern Stainless Steel Corp., Baltimore
E2 Empire Steel Co., Mansfield, O.

F1 Firth Sterling, Inc., McKeesport, Pa.
F2 Fitzsimons Steel Corp., Youngstown
F3 Follansbee Steel Corp., Follansbee, W. Va.

G2 Granite City Steel Co., Granite City, Ill.
G3 Great Lakes Steel Corp., Detroit
G4 Greer Steel Co., Dover, O.

H1 Hanna Furnace Corp., Detroit

I2 Ingersoll Steel Div., Chicago
I3 Inland Steel Co., Chicago
I4 Interlake Iron Corp., Cleveland

J1 Jackson Iron & Steel Co., Jackson, O.
J2 Jessop Steel Corp., Washington, Pa.
J3 Jones & Laughlin Steel Corp., Pittsburgh
J4 Joslyn Mfg. & Supply Co., Chicago
J5 Judson Steel Corp., Emeryville, Calif.

K1 Kaiser Steel Corp., Fontana, Cal.
K2 Keystone Steel & Wire Co., Peoria
K3 Koppers Co. Granite City, Ill.
K4 Keystone Drawn Steel Co., Spring City, Pa.

L1 Laclede Steel Co., St. Louis
L2 La Salle Steel Co., Chicago
L3 Lone Star Steel Co., Dallas
L4 Lukens Steel Co., Coatesville, Pa.

M1 Mahoning Valley Steel Co., Niles, O.
M2 McLouth Steel Corp., Detroit
M3 Mercer Tube & Mfg. Co., Sharon, Pa.
M4 Mid States Steel & Wire Co., Crawfordsville, Ind.
M5 Monarch Steel Div., Hammond, Ind.
M6 Mystic Iron Works, Everett, Mass.
M7 Milton Steel Products Div., Milton, Pa.
M8 Mill Strip Products Co., Evanston, Ill.

N1 National Supply Co., Pittsburgh
N2 National Tube Div., Pittsburgh
N3 Niles Rolling Mill Div., Niles, O.
N4 Northwestern Steel & Wire Co., Sterling, Ill.
N6 Northwest Steel Rolling Mills, Seattle
N7 Newman Crosby Steel Co., Pawtucket, R. I.
N8 Northeastern Steel Corp., Bridgeport, Conn.
N9 Nelson Steel & Wire Co.

O1 Oliver Iron & Steel Co., Pittsburgh
O2 Oregon Steel Mills, Portland

P1 Page Steel & Wire Div., Monessen, Pa.
P2 Phoenix Iron & Steel Co., Phoenixville, Pa.
P3 Pilgrim Drawn Steel Div., Plymouth, Mich.
P4 Pittsburgh Coke & Chemical Co., Pittsburgh
P5 Pittsburgh Screw & Bolt Co., Pittsburgh
P6 Pittsburgh Steel Co., Pittsburgh
P7 Portsmouth Div., Detroit Steel Corp., Detroit
P8 Plymouth Steel Co., Detroit
P9 Pacific States Steel Co., Niles, Cal.
P10 Precision Drawn Steel Co., Camden, N.J.
P11 Production Steel Strip Corp., Detroit
P13 Phoenix Mfg. Co., Joliet, Ill.
P14 Pacific Tube Co.
P15 Philadelphia Steel and Wire Corp.

R1 Reeves Steel & Mfg. Co., Dover, O.
R2 Reliance Div., Eaton Mfg. Co., Massillon, O.
R3 Republic Steel Corp., Cleveland
R4 Roebling Sons Co., John A., Trenton, N. J.
R5 J. & L. Steel Co., Stainless Div.
R6 Rodney Metals, Inc., New Bedford, Mass.
R7 Rome Strip Steel Co., Rome, N. Y.

S1 Sharon Steel Corp., Sharon, Pa.
S2 Sheffield Steel Div., Kansas City
S3 Shenango Furnace Co., Pittsburgh
S4 Simonds Saw and Steel Co., Fitchburg, Mass.
S5 Sweet's Steel Co., Williamsport, Pa.
S6 Standard Forging Corp., Chicago
S7 Stanley Works, New Britain, Conn.
S8 Superior Drawn Steel Co., Monaca, Pa.
S9 Superior Steel Corp., Carnegie, Pa.
S10 Seneca Steel Service, Buffalo

T1 Tonawanda Iron Div., N. Tonawanda, N. Y.
T2 Tennessee Coal & Iron Div., Fairfield
T3 Tennessee Products & Chem. Corp., Nashville
T4 Thomas Strip Div., Warren, O.
T5 Timken Steel & Tube Div., Canton, O.
T7 Texas Steel Co., Fort Worth
T8 Thompson Wire Co., Boston

U1 United States Steel Corp., Pittsburgh
U2 Universal-Cyclops Steel Corp., Bridgeville, Pa.
U3 Ulbrich Stainless Steels, Wallingford, Conn.
U4 U. S. Pipe & Foundry Co., Birmingham

W1 Wallingford Steel Co., Wallingford, Conn.
W2 Washington Steel Corp., Washington, Pa.
W3 Weirton Steel Co., Weirton, W. Va.
W4 Wheatland Tube Co., Wheatland, Pa.
W5 Wheeling Steel Corp., Wheeling, W. Va.
W6 Wickwire Spencer Steel Div., Buffalo
W7 Wilson Steel & Wire Co., Chicago
W8 Wisconsin Steel Div., S. Chicago, Ill.
W9 Woodward Iron Co., Woodward, Ala.
W10 Wyckoff Steel Co., Pittsburgh
W12 Wallace Barnes Steel Div., Bristol, Conn.

Y1 Youngstown Sheet & Tube Co., Youngstown, O.

PIPE AND TUBING

Base discounts (pct) f.o.b. mills. Base price about $200 per net ton

STANDARD T. & C.	BUTTWELD														SEAMLESS							
	½ In.		¾ In.		1 In.		1¼ In.		1½ In.		2 In.		2½–3 In.		2 In.		2½ In.		3 In.		3½–4 In	
	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.
Sparrows Pt. *B3*	3.25	+12.0	6.25	+8.0	9.75	+3.50	12.25	+2.75	12.75	+1.75	13.25	+1.25	14.75	+1.50								
Youngstown *R3*	5.25	+10.0	8.25	+6.0	11.75	+1.50	14.25	+0.75	14.75	0.25	15.25	0.75	16.75	0.50								
Fontana *K1*	+8.25	+23.5	+5.25	+19.5	+1.75	+15.00	0.75	+14.25	1.25	+13.25	1.75	+12.75	3.25	+13.00								
Pittsburgh *J3*	5.25	+10.0	8.25	+6.0	11.75	+1.50	14.25	+0.75	14.75	0.25	15.25	0.75	16.75	0.50	*9.25	+24.25	*2.75	+19.50	*0.25	+17.0	1.25	+15.50
Alton, Ill. *L1*	3.25	+12.0	6.25	+8.0	9.75	+3.50	12.25	+2.75	12.75	+1.75	13.25	+1.25	14.75	+1.50								
Sharon *M3*	5.25	+10.0	8.25	+6.0	11.75	+1.50	14.25	+0.75	14.75	0.25	15.25	0.75	16.75	0.50								
Fairless *N2*	3.25	+12.0	6.25	+8.0	9.75	+3.50	12.25	+2.75	12.75	+1.75	13.25	+1.25	14.75	+1.50								
Pittsburgh *N1*	5.25	+10.0	8.25	+6.0	11.75	+1.50	14.25	+0.75	14.75	0.25	15.25	0.75	16.75	0.50	*9.25	+24.25	*2.75	+19.50	*0.25	+17.0	1.25	+15.50
Wheeling *W5*	5.25	+10.0	8.25	+6.0	11.75	+1.50	14.25	+0.75	14.75	0.25	15.25	0.75	16.75	0.50								
Wheatland *W4*	5.25	+10.0	8.25	+6.0	11.75	+1.50	14.25	+0.75	14.75	0.25	15.25	0.75	16.75	0.50								
Youngstown *Y1*	5.25	+10.0	8.25	+6.0	11.75	+1.50	14.25	+0.75	14.75	0.25	15.25	0.75	16.75	0.50	*9.25	+24.25	*2.75	+19.50	*0.25	+17.0	1.25	+15.50
Indiana Harbor *Y1*	4.25	+11.0	7.25	+7.0	10.75	+2.50	13.25	+1.75	13.25	+0.75	14.25	+0.25	15.75	+0.50								
Lorain *N2*	5.25	+10.0	8.25	+6.0	11.75	+1.50	14.25	+0.75	14.75	0.25	15.25	0.75	16.75	0.50	*9.25	+24.25	*2.75	+19.50	*0.25	+17.0	1.25	+15.50
EXTRA STRONG PLAIN ENDS																						
Sparrows Pt. *B3*	7.75	+6.0	11.75	+2.0	14.75	2.50	15.25	1.25	15.75	2.25	16.25	2.75	16.75	1.50								
Youngstown *R3*	9.75	+4.0	13.75	list	16.75	4.50	17.25	3.25	17.75	4.25	18.25	4.75	18.75	3.50								
Fairless *N2*	7.75	+6.0	11.75	+2.0	14.75	2.50	15.25	1.25	15.75	2.25	16.25	2.75	16.75	1.50								
Fontana *K1*	+3.75		0.25		3.25		3.75		4.25		4.75		5.25									
Pittsburgh *J3*	9.75	+4.0	13.75	list	16.75	4.50	17.25	3.25	17.75	4.25	18.25	4.75	18.75	3.50	*7.75	+21.75	*0.25	+16.0	2.25	+13.50	7.25	+8.50
Alton, Ill. *L1*	7.75	+6.0	11.75	+2.0	14.75	2.50	15.25	1.25	15.78	2.25	16.25	2.75	16.75	1.50								
Sharon *M3*	9.75	+4.0	13.75	list	16.75	4.50	17.25	3.25	17.78	4.25	18.25	4.75	18.75	3.50								
Pittsburgh *N1*	9.75	+4.0	13.75	list	16.75	4.50	17.25	3.25	17.75	4.25	18.25	4.75	18.75	3.50	*7.75	+21.75	*0.25	+16.0	2.25	+13.50	7.25	+8.50
Wheeling *W5*	9.75	+4.0	13.75	list	16.75	4.50	17.25	3.25	17.78	4.25	18.25	4.75	18.75	3.50								
Wheatland *W4*	9.75	+4.0	13.75	list	16.75	4.50	17.25	3.25	17.75	4.25	18.25	4.75	18.75	3.50								
Youngstown *Y1*	9.75	+4.0	13.75	list	16.75	4.50	17.25	3.25	17.75	4.25	18.25	4.75	18.75	3.50	*7.75	+21.75	*0.25	+16.0	2.25	+13.50	7.25	+8.50
Indiana Harbor *Y1*	8.75	+5.0	12.75	+1.0	15.75	3.50	16.25	2.25	16.75	3.25	17.25	3.75	17.75	2.50								
Lorain *N2*	9.75	+4.0	13.75	list	16.75	4.50	17.25	3.25	17.75	4.25	18.25	4.75	18.75	3.50	*7.75	+21.75	*0.75	+16.0	2.25	+13.50	7.25	+8.50

Threads only, buttweld and seamless 2¼ pt. higher discount. Plain ends, buttweld and seamless, 3-in. and under, 5½ pt. higher discount

Galvanized discounts based on zinc price range of over 9¢ to 11¢ per lb. East St. Louis. For each 2¢ change in zinc, discounts vary as follows: ½, ¾ and 1-in., 2 pt.; 1¼, 1½ and 2-in., 1½ pt.; 2½ and 3-in., 1 pt., e.g., zinc price range of over 13¢ to 15¢ would lower discounts on 2½ and 3-in. pipe by 2 points; zinc price in range over 7¢ to 9¢ would increase discounts East St. Louis zinc price now 10¢ per lb.

TOOL STEEL

F.o.b. mill

W	Cr	V	Mo	Co	per lb	SAE
18	4	1	—	—	$1.68	T-1
18	4	1	—	5	2.385	T-4
18	4	2	—	—	1.185	T-2
1.5	4	1.5	8	—	1.04	M-1
6	4	3	6	—	1.43	M-3
6	4	2	5	—	1.185	M-2

High-carbon chromium	.83	D-3, D-5
Oil hardened manganese	.45	O-2
Special carbon	.41	W-1
Extra carbon	.345	W-1
Regular carbon	.29	W-1

Warehouse prices on and east of Mississippi are 4¢ per lb higher. West of Mississippi, 6¢ higher.

CLAD STEEL

Base prices, cents per lb f.o.b.

	Cladding	Plate (*A3, J2, L4*) 10 pct	15 pct	20 pct	Sheet (*I2*) 20 pct
Stainless Type	302				37.50
	304	37.95	42.25	46.70	40.00
	316	44.40	49.50	54.50	58.75
	321	40.05	44.60	49.30	47.25
	347	42.40	47.55	52.80	7.00
	405	29.85	33.35	36.85	
	410	29.55	33.10	36.70	
	430	29.80	33.55	37.25	

CR Strip (*S9*) Copper, 10 pct, 2 sides, 40.25; 1 side, 33.95.

ELECTRICAL SHEETS

22-Gage F.o.b. Mill Cents Per Lb	Hot-Rolled (Cut Lengths)*	Cold-Reduced (Coiled or Cut Length) Semi-Processed	Fully Processed
Field		9.625	
Armature	11.10	10.85	11.35
Elect.	11.80	11.55	12.05
Hermetic		12.10	
Motor	12.90	12.65	13.15
Dynamo	13.95	13.70	14.20
Trans. 72	15.00		15.25
Trans. 65	15.55		
		Grain Oriented	
Trans. 58	16.05	Trans. 80	19.20
Trans. 52	17.10	Trans. 73	19.70

Producing points: Beech Bottom (*W5*); Brackenridge (*A5*); Granite City (*G2*); Indiana Harbor (*I3*); Mansfield (*E2*); Newport, Ky. (*N5*); Niles, O. (*N3*); Vandergrift (*U1*); Warren, O. (*R3*); Zanesville, Butler (*A7*).

LAKE SUPERIOR ORES

51.5% Fe natural content, delivered lower Lake ports. Prices for 1957 season. Freight charges for seller's account.

	Gross Ton
Openhearth lump	$12.70
Old range, bessemer	11.85
Old range, nonbessemer	11.70
Mesabi, bessemer	11.60
Mesabi, nonbessemer	11.45
High phosphorus	11.45

MERCHANT WIRE PRODUCTS

F.o.b. Mill	Standard Q Coated Nails Col	Woven Wire Fence Col	"T" Fence Posts Col	Single Loop Bale Ties Col	Galv. Barbed and Twisted Barbless Wire Col	Merch. Wire Annld ¢/lb.	Merch. Wire Galv ¢/lb.
Alabama City *R3*	173	187		212	193	8.65	9.20
Aliquippa *J3****	173	190			190	8.65	9.325
Atlanta *A8***	175			208	199	8.50	9.10
Bartonville *K2***	175	192	178	214	198	8.75	9.425**
Buffalo *W6*						8.65	8.95*
Chicago *N4****							
Cleveland *A6*							
Cleveland *A5*						8.65	
Crawf'dsv. *M4***	175	192		214	198	8.75	9.425
Donora, Pa. *A5*	173	187		212	193	8.65	9.20
Duluth *A5*	173	187		212	193	8.65	9.20
Fairfield, Ala. *T2*	173	187		212	193	8.65	9.20
Galveston *D4*	8.95‡						
Houston *S2*	178	192		217	198	8.90	9.45
Jacksonville *M4*	184-1	197		219	203	9.00	9.675
Johnstown *B3****	173	190**	172		196**	8.65	9.325**
Joliet, Ill. *A5*	173	187		212	193	8.65	9.20
Kokomo *C9**	175	189*		214	195*	8.75	9.30*
L. Angeles *B2****						9.60	10.275
Kansas City *S2**	178	192*		217	198*	8.90	9.45*
Minnequa *C6*†	178	192†	177	217	198†	8.90	9.45†
Monessen *P6*					193	8.65	9.20
Palmer, Mass. *W6*						8.95	9.50*
Pittsburg, Cal. *C7*	192	210			213	9.60	10.15
Rankin, Pa. *A5*	173	187			193	8.65	9.20
So. Chicago *R3*	173	187			193	8.65	9.20
S. San Fran. *C6*†				236		9.60	10.15†
SparrowsPt. *B3****	175			214	198	8.75	9.425
Struthers, O. *Y1**						8.65	9.30
Worcester *A5*	179					8.95	9.50
Williamsport *S5*							

* Zinc less than .10¢.
** 11-12¢ zinc.
*** .10¢ zinc.
† Plus zinc extras.
‡ Wholesalers only.

WAREHOUSES

Metropolitan Price, dollars per 100 lb.

Cities	City Delivery‡ Charge	Sheets: Hot-Rolled (10 ga. & hvr.)	Sheets: Cold-Rolled (15 gage)	Sheets: Galvanized (10 gage)††	Strip: Hot-Rolled	Plates	Shapes: Standard Structural	Bars: Hot-Rolled (merchant)	Bars: Hot-Rolled (special quality)	Bars: Cold-Finished	Alloy Bars: Hot-Rolled 4615 As rolled	Alloy Bars: Hot-Rolled 4140 Annealed	Alloy Bars: Cold-Drawn 4615 As rolled	Alloy Bars: Cold-Drawn 4140 Annealed
Atlanta		8.59	9.87	10.13	8.64	8.97	9.05	9.01		10.68				
Baltimore	$.10	8.38	8.88	9.86	8.86	8.76	9.29	9.06	9.16	9.73	16.18	15.18	19.73	18.98
Birmingham	.15	8.18	9.45	10.15	8.23	8.56	8.64	8.07	8.60	10.57				
Boston	.10	9.41	10.50	11.15	9.45	9.75	9.69	9.07	9.78		15.79	15.24	19.89	19.04
Buffalo	.15	8.40	9.60	11.22	8.65	9.05	8.65	8.40	8.95	8.85	16.34	15.15	19.01	18.95
Chicago	.15	8.35	9.60	10.15	8.38	8.71	8.79	8.07	8.75	8.95	15.80	14.65	19.35	18.40
Cincinnati	.15	8.49	9.65	10.20	8.69	9.08	9.33	8.53	9.07	9.46	15.61	15.11	18.95	18.91
Cleveland	.15	8.33	9.60	10.10	8.48	8.94	9.16	8.16	8.84	9.20	15.89	14.74	19.44	18.54
Denver		9.70	11.30	12.49	9.80	9.70	9.80	9.95		10.65				17.60
Detroit	.15	8.58	9.85	10.50	8.73	9.06	9.33	8.52	9.05	9.30	15.46	15.06	18.81	18.86
Houston		8.45	9.75		8.60	9.05	9.10	9.05	9.05	11.10	16.20		19.30	19.05
Kansas City	.20	8.52	9.72	10.07	8.60	8.83	8.87	8.73		9.42	15.32	14.77	18.72	18.42
Los Angeles	.10	9.60	10.85	11.75	9.65	9.65	9.70	9.10	9.80	12.85	17.25	15.00	21.05	19.25
Memphis	.15	8.02	9.22		8.12	8.35	8.39	8.25		9.85				
Milwaukee	.15	8.48	9.73	10.28	8.51	8.84	9.00	8.88	9.88	9.18	15.43	14.93	18.78	18.73
New York	.10	8.97	10.23	10.66	9.42	9.53	9.45	9.48	9.67		15.02	15.19	18.42	18.99
Norfolk	.20	8.00			8.40	8.35	8.70	8.45		10.70				
Philadelphia	.10	8.10	9.00	10.34	8.79	8.87	8.60	8.75	9.18	9.41	15.61	15.11	18.96	18.91
Pittsburgh	.15	8.33	9.60	10.50	8.48	8.71	8.79	8.75	8.75	9.20	15.80	14.80	19.35	18.60
Portland		9.50	11.20	11.55	11.35	9.30	9.65	9.65	9.65	14.65	18.50	16.10	20.75	20.25
San Francisco	.10	9.45	10.85	11.10	11.05	9.70	9.60	9.80	9.80	13.10	17.05	15.50	21.05	19.60
Seattle		9.95	11.15	12.00	10.00	9.70	9.80	10.10	9.85	14.05	16.55	15.85	20.65	19.45
Spokane	.15	10.10	11.30	12.15	10.15	9.85	9.95	10.25	10.00	14.20		17.25	21.55	21.05
St. Louis	.15	8.69	9.94	10.51	8.74	9.08	9.25	8.43	9.12	9.56	15.66	15.01	19.01	18.81
St. Paul	.15	8.94	10.19	10.76	8.99	9.45	9.53	9.22	9.37	9.81		15.26		19.06

Base Quantities (Standard unless otherwise keyed): Cold finished bars: 2000 lb or over. Alloy bars: 1000 to 1999 lb. All others: 2000 to 4999 lb. All HR products may be combined for quantity. All galvanized sheets may be combined for quantity. CR sheets may be combined with each other or with galvanized sheets for quantity.
† 16 gage. †† 10¢ zinc. ‡Deduct for country delivery

C-R SPRING STEEL

Cents Per Lb F.o.b. Mill	CARBON CONTENT 0.26-0.40	0.41-0.60	0.61-0.80	0.81-1.05	1.06-1.35
Baltimore, Md. *T8*	9.50	10.70	12.90	15.90	18.85
Bristol, Conn. *W12*					
Boston *T8*	9.50	10.70	12.90	15.90	18.85
Buffalo, N. Y. *R7*	8.95	10.40	12.60	15.60	18.55
Carnegie, Pa. *S9*	8.95	10.40	12.60	15.60	18.55
Cleveland *A5*	8.95	10.40	12.60	15.60	18.55
Dearborn *S1*	9.05	10.50	12.70		
Detroit *D1*	9.05	10.50	12.70	15.70	
Detroit *D2*	9.05	10.50	12.70		
Dover, O. *G4*	8.95	10.40	12.60	15.60	18.55
Evanston, Ill. *M8*	9.05	10.40	12.60		
Franklin Park, Ill. *T8*	9.05	10.25	12.45	15.45	18.40
Harrison, N. J. *C11*			12.90	16.10	19.30
Indianapolis *J3*	9.10	10.55	12.60	15.60	18.55
Los Angeles	11.15	12.60	14.80	17.80	
New Castle, Pa. *B4*	8.95	10.40	12.60	15.60	
New Haven, Conn. *D1*	9.40	10.70	12.90	15.90	
Pawtucket, R. I. *N7*	9.50	10.70	12.90	15.90	18.85
Pittsburgh *S7*	8.95	10.40	12.60	15.60	18.55
Riverdale, Ill. *A1*	9.05	10.40	12.60	15.60	18.55
Sharon, Pa. *S1*	8.95	10.40	12.60	15.60	18.55
Trenton *R4*		10.70	12.90	16.10	19.30
Wallingford *W1*	9.40	10.70	12.90	15.90	18.75
Warren, Ohio *T4*					
Worcester, Mass. *A5*	9.50	10.70	12.90	15.90	18.85
Youngstown *J3*	8.95	10.40	12.60	15.60	18.55

BOILER TUBES

$ per 100 ft. carload lots, cut 10 to 24 ft. F.o.b. Mill	Size OD-In.	B.W. Ga.	Seamless H.R.	Seamless C.D.	Elec. Weld H.R.	Elec. Weld C.D.
Babcock & Wilcox	2	13	36.34	42.56	33.21	
	2½	12	48.94	57.31	44.73	
	3	12	56.51	66.18	51.66	
	3½	11	65.97	77.25	60.30	
	4	10	87.61	102.59	80.07	
National Tube	2	13	36.34	42.56	33.21	
	2½	12	48.94	57.31	44.73	
	3	12	56.51	66.18	51.66	
	3½	11	65.97	77.25	60.30	
	4	10	87.61	102.59	80.07	
Pittsburgh Steel	2	13	36.34	42.56		
	2½	12	48.94	57.31		
	3	12	56.51	66.18		
	3½	11	65.97	77.25		
	4	10	87.61	102.59		

(Effective Aug. 13, 1957)

RAILS, TRACK SUPPLIES

F.o.b. Mill Cents Per Lb	No. 1 Std. Rails	Light Rails	Joint Bars	Track Spikes	Screw Spikes	Tie Plates	Track Bolts Untreated
Bessemer *U1*	S. 525	6.50	6.975				14.75
Cleveland *R3*				9.75			
So. Chicago *R3*							
Ensley *T2*	S. 525	6.50					
Fairfield *T2*		6.50		9.75		6.60	
Gary *U1*	S. 525					6.60	
Huntington *C16*		6.50					
Ind. Harbor *I3*	S. 525		6.975	9.75		6.60	
Ind. Harbor *Y1*				9.75			
Johnstown *B3*		6.50					
Joliet *U1*			6.975				
Kansas City *S2*				9.75			14.75
Lackawanna *B3*	S. 525	6.50	6.975			6.60	
Lebanon *B3*			6.975		14.50		14.75
Minnequa *C6*	S. 525	7.00	6.975	9.75		6.60	14.75
Pittsburgh *P5*							14.75
Pittsburgh *J3*				9.75			15.25
Seattle *B2*				10.25		6.75	
Steelton *B3*	S. 525		6.975			6.60	
Struthers *Y1*				9.75			
Torrance *C7*						6.75	
Williamsport *S5*		6.50					
Youngstown *R3*				9.75			

COKE

Furnace, beehive (f.o.b. oven) Net-Ton
Connellsville, Pa. ..... $15.00 to $15.75
Foundry, beehive (f.o.b. oven)
$17.50 to $19.00

Foundry oven coke

Buffalo, del'd	$31.75
Detroit, f.o.b.	30.50
New England, del'd	31.55
Kearney, N. J., f.o.b.	29.75
Philadelphia, f.o.b.	29.50
Swedeland, Pa., f.o.b.	29.50
Painesville, Ohio, f.o.b.	30.50
Erie, Pa., f.o.b.	30.50
Cleveland, del'd	32.65
Cincinnati, del'd	31.84
St. Paul, f.o.b.	29.75
St. Louis, f.o.b.	31.50
Birmingham, f.o.b.	28.85
Milwaukee, f.o.b.	30.50
Neville, Is., Pa.	29.25

ELECTRODES

Cents per lb. f.o.b. plant, threaded, with nipples, unbored.

GRAPHITE Diam. (In.)	Length (In.)	Price	CARBON* Diam. (In.)	Length (In.)	Price
24	84	24.75	40	100, 110	10.70
20	72	24.00	35	110	10.70
16 to 18	72	24.50	30	110	10.85
14	72	25.00	24	72 to 84	11.25
12	72	25.50	20	90	11.00
10	60	26.50	17	72	11.40
9	48	27.00	14	72	11.85
7	60	26.75	12	60	12.95
6	60	30.00	10	60	13.00
4	40	33.25	8	60	13.30
3	40	35.25			
2½	30	37.25			
2	24	57.75			

* Prices shown cover carbon nipples.

ELECTROPLATING SUPPLIES

Anodes

(Cents per lb, frt allowed in quantity)

Copper	
Cast elliptical, 18 in. or longer, 5000 lb lots	45.75
Electrodeposited	37.00
Brass, 80-20, ball anodes, 2000 lb or more	48.00
Zinc, ball anodes, 2000 lb lots (for elliptical add 2¢ per lb)	18.00
Nickel, 99 pct plus, rolled carbon, 5000 lb (Rolled depolarized add 3¢ per lb)	102.25
Cadmium	1.70
Tin, ball anodes and elliptical $1.07 per in.	

Chemicals

(Cents per lb, f.o.b. shipping point)

Copper cyanide, 100 lb drum	74.80
Copper sulphate, 100 lb bags, per cwt.	24.35
Nickel salts, single, 100 lb bags	40.50
Nickel chloride, freight allowed, 300 lb	45.50
Sodium cyanide, domestic, f.o.b. N. Y., 200 lb drums (Philadelphia price 23.30)	23.05
Zinc cyanide, 100 lb	59.00
Potassium cyanide, 100 lb drum N. Y.	48.00
Chromic acid, flake type, 100,000 lb or more	31.00

BOLTS, NUTS, RIVETS, SCREWS

(Base discount, f.o.b. mill)
Pct Discounts

Machine and Carriage Bolts	Full Container Price	30 Containers	20,000 Lb.	40,000 Lb.
½" and smaller x 6" and shorter	49	54	56	57
⅝" thru 1" x longer than 6"	35	40	43	45
Rolled thread carriage bolts ½" & smaller x 6" and shorter	49	54	56	57
Lag, all diam. x 6" & shorter	49	54	56	57
Lag, all diam. longer than 6 in.	39	44½	47	48½
Plow bolts, ½" and smaller x 6" and shorter	49	54	56	57

(Add 25 pct for broken case quantities)

Nuts, Hex, HP reg. & hvy.

	Full case or Keg price
¾ in. or smaller	60½
⅞ in. to 1 in. inclusive	55½
1 ⅛ in. to 1½ in. inclusive	58½
1⅝ in. and larger	53½

C. P. Hex reg. & hvy.

¾ in. and smaller	60½
⅞ in. to 1½ in. inclusive	55½
1⅝ in. and larger	53½

Hot Galv. Hex Nuts (All Types)

¾ in. and smaller	46½

Semi-finished Hex Nuts

⅝ in. or smaller	60½
¾ in. to 1½ in. inclusive	55½
1⅝ in. and larger	52½

(Add 25 pct for broken case or keg quantities)

Finished

⅞ in. and smaller	63

Rivets

	Base per 100 lb
½ in. and larger	$12.25
	Pct Off List
7/16 in. and smaller	19

Cap Screws

Discount (Packages)
Full Finished H. C. Heat Treat

New std. hex head, packaged		
⅝" diam. and smaller x 6" and shorter	40	26
¾" ⅞" and 1" diam. x 6" and shorter	23	3
⅝" diam. and smaller x longer than 6"	8	+13
¾", ⅞", and 1" diam. x longer than 6"	+ 6	+33

	C-1018 Steel Full-Finished Cartons	Bulk
¼" through ⅝" dia. x 6" and shorter	58	49
¾" through 1" dia. x 6" and shorter	45	33

Minimum quantity—¼" through ⅝" diam., 15,000 pieces; 1/16" through ⅝" diam., 5,000 pieces; ¾" through 1" diam., 2,000 pieces.

Machine Screws & Stove Bolts

Plain Finish	Quantity	Discount Mach. Screws	Discount Stove Bolts
Cartons		19	33
Bulk			
To ⅛" diam. incl.	25,000-200,000	9	54
5/16 to ½" diam. incl.	15,000-100,000	9	54
All diam. over 3" long	5,000-100,000	—	54

Machine Screws & Stove Bolt Nuts

In cartons	Quantity	Discount Hex	Discount Square
		16	19
In Bulk			
⅜" diam. & smaller	15,000-100,000	7	9

CAST IRON WATER PIPE INDEX

Birmingham	119.0
New York	131.7
Chicago	134.1
San Francisco-L. A.	141.8

Dec. 1955 value, Class B or heavier 6 in. or larger, bell and spigot pipe. Explanation: p. 57, Sept. 1, 1955, issue. Source: U. S. Pipe and Foundry Co.

REFRACTORIES

Fire Clay Brick

	Carloads per 1000
First quality, Ill., Ky., Md., Mo., Ohio, Pa. (except Salina, Pa., add $5.00)	$135.00
No. 1 Ohio	120.00
Sec. quality, Pa., Md., Ky., Mo., Ill.	120.00
No. 2 Ohio	103.00
Ground fire clay, net ton, bulk (except Salina, Pa., add $2.00)	21.50

Silica Brick

Mt. Union, Pa., Ensley, Ala.	$150.00
Childs, Hays, Pa.	155.00
Chicago District	160.00
Western Utah	175.00
California	180.00
Super Duty Hays, Pa., Athens, Tex., Windham, Warren, O., Morrisville	157.00-160.00
Silica cement, net ton, bulk, Latrobe	28.50
Silica cement, net ton, bulk, Chicago	25.50
Silica cement, net ton, bulk, Ensley, Ala.	26.50
Silica cement, net ton, bulk, Mt. Union	24.50
Silica cement, net ton, bulk, Utah and Calif.	37.00

Chrome Brick

Per net ton

Standard chemically bonded, Balt.	$105.00
Standards chemically bonded, Curtliner, Calif.	115.00
Burned, Balt.	99.00

Magnesite Brick

Standard, Baltimore	$131.00
Chemically bonded, Baltimore	116.00

Grain Magnesite

St. ⅜ to ⅛-in grains

Domestic, f.o.b. Baltimore in bulk	$73.00
Domestic, f.o.b. Chewalah, Wash., Luning, Nev.	
in bulk	46.00
in sacks	52.00-54.00

Dead Burned Dolomite

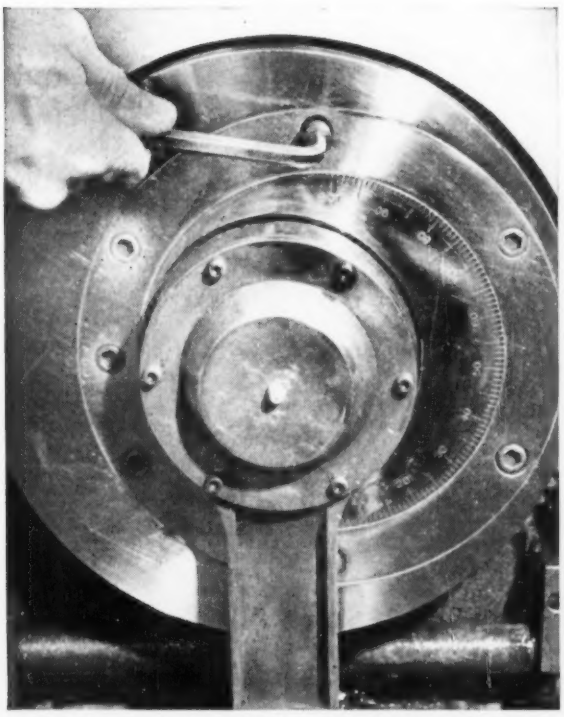
Per net ton

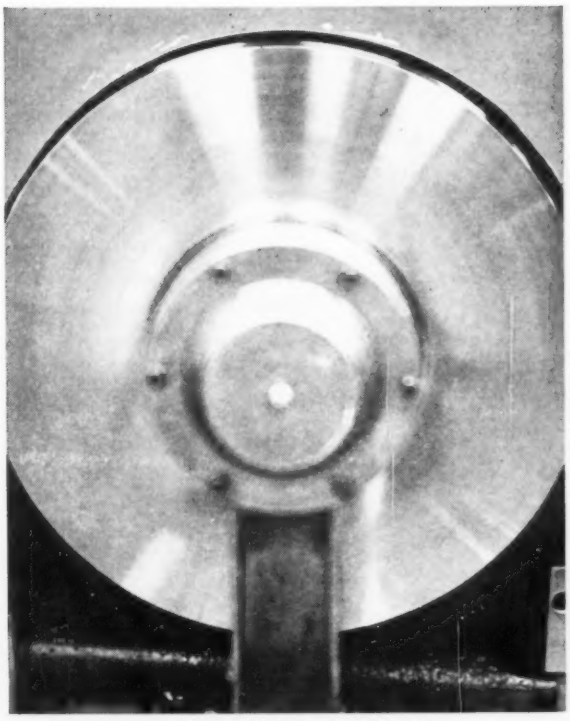
F.o.b. bulk, producing points in:	
Pa., W. Va., Ohio	$16.75
Midwest	17.00
Missouri Valley	15.00

METAL POWDERS

Per pound, f.o.b. shipping point, in ton lots, for minus 100 mesh

Swedish sponge iron, del. East of Miss. River, ocean bags, 23,000 lb. and over	10.5¢
F.O.B. Riverton or Camden, New Jersey, West of Miss. River	9.5¢
Domestic sponge iron, 98+% Fe, 23,000 lb. and over del'd East of Miss. River	10.5¢
F.O.B. Riverton, New Jersey, West of Miss. River	9.5¢
Canadian sponge iron, del'd in East, carloads	9.5¢
Electrolytic iron, annealed, imported 99.5+% Fe	27.5¢
domestic 99.5+% Fe	36.5¢
Electrolytic iron, unannealed minus 325 mesh, 99+% Fe	57.0¢
Electrolytic iron melting stock, 99.84% pure	22.0¢
Carbonyl iron size 3 to 20 micron, 98%, 99.8+% Fe.	88.0¢ to $2.90
Aluminum, freight allowed	38.0¢
Brass, 10 ton lots	37.4¢ to 41.5¢
Copper electrolytic	45.75¢
Copper, reduced	49.75¢
Cadmium, 100-199 lb. 95¢ plus metal value	
Chromium, electrolytic, 99.85% min. Fe .03 max. Del'd	$5.00
Lead	8.90¢ plus metal value
Manganese f.o.b. Extron, Pa.	46.0¢
Molybdenum, 99%	$3.60 to $3.95
Nickel, chemically precipitated	$1.05
Nickel, unannealed	$1.00
Nickel, annealed	$1.06
Nickel, spherical, unannealed #80	$1.13
Silicon	43.50¢
Solder powder, 7.0¢ to 9.0¢ plus met. value	
Stainless steel, 302	$1.02
Stainless steel, 316	$1.20
Tin	14.00¢ plus metal value
Tungsten, 99% (65 mesh)	$3.75 (nominal)
Zinc, 10 ton lots	18.5¢ to 31.7¢

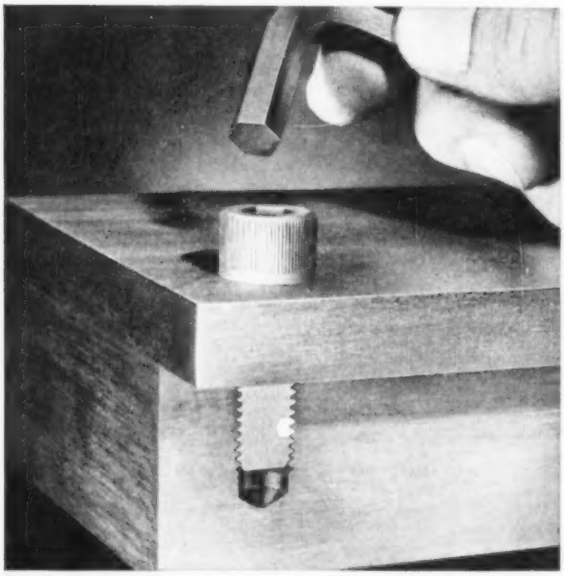




Self-locking UNBRAKO socket screws keep critical adjustments secure in the eccentric drive mechanism of this fatigue testing machine. Drive system delivers varying loads up to 15,000 pounds force to equipment under test at 1050 cycles per minute.

Vibration won't loosen Self-locking UNBRAKO socket cap screws

Screws with Nylok* device permit adjustments, keep precise settings during long test runs



HOW IT LOCKS. The tough, resilient Nylok locking pellet keys itself into the mating threads. It forces threads together, and locks the screw securely—whether or not the screw is seated.

UNBRAKO socket screws with the Nylok self-locking device stay tight under constant vibration.

Take the eccentric drive system in the fatigue testing machine illustrated above, for example. This machine must frequently run for periods up to 2 weeks or longer, day and night, to complete a single test. Loosening of the screws which are used to adjust the tension-setting mechanism could not only cause damage to the machine, but also make the test data worthless. Self-locking UNBRAKO socket head cap screws eliminate such problems.

An UNBRAKO socket screw with the Nylok self-locking device is a single unit. Just screw it into any tapped hole. Seated or not, it locks positively wherever wrenching stops. Constant vibration or pounding, or endless running of a machine, won't affect these self-locking UNBRAKOS. The screws will not work loose!

Write today for your copy of Form 2193, which gives complete catalog and technical data on the entire line of UNBRAKO socket screws with the Nylok self-locking device. Or see your authorized industrial distributor. Unbrako Socket Screw Division, STANDARD PRESSED STEEL CO., Jenkintown 17, Pa.

UNBRAKO SOCKET SCREW DIVISION

STANDARD PRESSED STEEL CO.

SPS

JENKINTOWN PENNSYLVANIA

*T.M. Reg. U.S. Pat. Off. The Nylok Corporation

FERROALLOY PRICES

(Effective Aug. 13, 1957)

Ferrochrome

Cents per lb contained Cr, lump, bulk, carloads, del'd. 67-71% Cr, .30-1.00% max. Si.

0.02% C	41.50	0.20% C	38.50
0.03% C	41.00	0.50% C	38.25
0.06% C	39.50	1.00% C	37.50
0.10% C	39.00	1.50% C	37.35
0.15% C	38.75	2.00% C	37.25

4.00-4.50% C, 67.70% Cr, 1-2% Si.. 27.75
3.50-5.00% C, 57-64% Cr, 2.00-4.50% Si 26.50
0.025% C (Simplex)..... 34.75
0.10% C, 50-52% Cr, 2% max Si.... 35.50
8.50% max. C, 50-55% Cr, 3-6% Si.. 24.00
8.50% C, 50-55% Cr, 3% max. Si... 24.00

High Nitrogen Ferrochrome

Low-carbon type 0.75% N. Add 5¢ per lb to regular low carbon ferrochrome max 0.10% C price schedule. Add 5¢ for each additional 0.25% of N.

Chromium Metal

Per lb chromium contained, packed, delivered, ton lots, 97% min. Cr, 1% max. Fe.

0.10% max. C	$1.31
0.50% max. C	1.31
9 to 11% C, 88-91% Cr, 0.75% Fe...	1.40

Electrolytic Chromium Metal

Per lb of metal 2" x D plate (⅛" thick) delivered packed, 99.80% min. Cr. (Metallic Base) Fe 0.20 max.

Carloads	$1.29
Ton lots	1.31
Less ton lots	1.33

Low Carbon Ferrochrome Silicon

(Cr 34-41%, Si 42-45%, C 0.05% max.) Carloads, delivered, lump, 3-in. x down, per lb of Cr, packed.

Carloads	44.65
Ton lots	48.95
Less ton lots	51.45

Calcium-Silicon

Per lb of alloy, lump, delivered, packed. 30-33% Cr, 60-65% Si, 3.00 max. Fe.

Carloads	25.65
Ton lots	27.95
Less ton lots	29.45

Calcium-Manganese—Silicon

Cents per lb of alloy, lump, delivered, packed.
16-20% Ca, 14-18% Mn, 53-59% Si.

Carloads	24.25
Ton lots	26.15
Less ton lots	27.15

SMZ

Cents per pound of alloy, delivered, 60-65% Si, 5-7% Mn, 5-7% Zr, 20% Fe ½ in. x 12 mesh.

Ton lots	20.15
Less ton lots	21.40

V Foundry Alloy

Cents per pound of alloy, f.o.b. Suspension Bridge, N. Y., freight allowed, max. St. Louis, V-5: 38-42% Cr, 17-19% Si, 8-11% Mn, packed.

Carload lots	17.20
Ton lots	18.70
Less ton lots	19.95

Graphidox No. 4

Cents per pound of alloy, f.o.b. Suspension Bridge, N. Y., freight allowed, max. St. Louis. Si 48 to 52%, Ti 9 to 11%, Ca 5 to 7%.

Carload packed	18.50
Ton lots to carload packed	19.65
Less ton lots	20.90

Ferromanganese

Maximum base price, f.o.b., lump size, base content 74 to 76 pct Mn.

Producing Point	Cents per-lb
Marietta, Ashtabula, O.; Alloy, W. Va.; Sheffield, Ala.; Portland, Ore.	12.75
Johnstown, Pa.	12.75
Sheridan, Pa.	12.75
Philo, Ohio	12.75
S. Duquesne	12.75

Add or subtract 0.1¢ for each 1 pct Mn above or below base content.

Briquets, delivered, 66 pct Mn:

Carloads, bulk	14.80
Ton lots packed	17.20

Spiegeleisen

Per gross ton, lump, f.o.b. Palmerton, Pa.

Manganese	Silicon	
16 to 19%	3% max.	$100.50
19 to 21%	3% max.	102.50
21 to 23%	3% max.	105.00

Manganese Metal

2 in. x down, cents per pound of metal delivered.

95.50% min. Mn, 0.2% max. C, 1% max. Si, 2.5% max. Fe.

Carload, packed	45.75
Ton lots	47.25

Electrolytic Manganese

F.o.b. Knoxville, Tenn., freight allowed east of Mississippi, f.o.b. Marietta, O., delivered, cents per pound.

Carloads	34.00
Ton lots	36.00
250 to 1999 lb	38.00
Premium for Hydrogen-removed metal	0.75

Medium Carbon Ferromanganese

Mn 80 to 85%, C 1.25 to 1.50, Si 1.50% max., carloads, lump, bulk, delivered, per lb of contained Mn. 25.50

Low-Carb Ferromanganese

Cents per pound Mn contained, lump size, del'd Mn 85-90%.

	Carloads	Ton	Less
0.07% max. C, 0.06% P, 90% Mn	37.15	39.95	41.15
0.07% max. C	35.10	37.90	39.10
0.10% max. C	34.35	37.15	38.35
0.15% max. C	33.60	36.40	37.60
0.30% max. C	32.10	34.90	36.10
0.50% max. C	31.60	34.40	35.60
0.75% max. C, 80.85% Mn, 5.0-7.0% Si	28.60	31.40	32.60

Silicomanganese

Lump size, cents per pound of metal, 65-68% Mn, 18-20% Si, 1.5% max. C for 2% max. C, deduct 0.2¢ f.o.b. shipping point.

Carloads bulk	12.80
Ton lots, packed	14.45
Briquet contract basis carloads, bulk, delivered, per lb of briquet	15.10
Ton lots, packed, pallets	16.50

Silvery Iron (electric furnace)

Si 15.50 to 16.00 pct, f.o.b. Keokuk, Iowa, or Wenatchee, Wash., $106.50 gross ton, freight allowed to normal trade area. Si 15.01 to 15.50 pct, f.o.b. Niagara Falls, N. Y., $93.00

Silicon Metal

Cents per pound contained Si, lump size, delivered, packed.

	Ton lots, packed	Carloads, packed
96.75% Si, 1.25% Fe	22.20	20.90
98% Si, 0.75% Fe	22.95	21.65

Silicon Briquets

Cents per pound of briquets, bulk, delivered, 40% Si, 2 lb Si, briquets.

Carloads, bulk	7.70
Ton lots, packed	10.50

Electric Ferrosilicon

Cents per lb contained Si, lump, bulk, carloads, f.o.b. shipping point.

50% Si	13.00	75% Si	16.40
65% Si	15.25	85% Si	18.10
	90% Si	19.50	

Ferrovanadium

50-55% V delivered, per pound, contained V, carloads, packed.

Openhearth	3.20
Crucible	3.30
High speed steel (Primos)	3.40

Calcium Metal

Eastern zone, cents per pound of metal, delivered.

	Cast	Turnings	Distilled
Ton lots	$2.05	$2.95	$3.75
Less ton lots	2.40	3.30	4.55

Alsifer, 20% Al, 40% Si, 40% Fe.

f.o.b. Suspension Bridge, N. Y., per lb.

Carloads	10.65¢
Ton lots	11.80

Calcium molybdate, 43.6-46.6% f.o.b. Langeloth, Pa., per pound Contained Mo

$1.28

Ferrocolumbium, 50-50%, 2 in. x D, delivered per pound contained Cb.

Ton lots	$4.90
Les ton lots	4.95

Ferro-tantalum-columbium, 20% Ta, 40% Cb, 0.30% C, del'd ton lots, 2-in. x D per lb con't Sb plus Ta

$4.25

Ferromolybdenum, 55-75%, 200-lb containers, f.o.b. Langeloth Pa., per pound contained Mo

$1.68

Ferrophosphorus, electric, 23-26%, car lots, f.o.b. Siglo, Mt. Pleasant, Tenn., $4.00 unitage, per gross ton

$90.00
10 tons to less carload.... $110.00

Ferrotitanium, 40% regular grade 0.10% C max., f.o.b. Niagara Falls, N. Y., and Bridgeville, Pa., freight allowed, ton lots, per lb contained Ti

$1.35

Ferrotitanium, 25% low carbon, 0.10% C max., f.o.b. Niagara Falls, N. Y., and Bridgeville, Pa., freight allowed, ton lots, per lb contained Ti

	$1.50
Less ton lots	$1.54

Ferrotitanium, 15 to 18% high carbon, f.o.b. Niagara Falls, N. Y., freight allowed, carload per net ton

$240.00

Ferrotungsten, ¼ x down packed, per pounds contained W, ton lots delivered

$2.60 (nominal)

Molybdic oxide, briquets per lb contained Mo, f.o.b. Langeloth, Pa.

	$1.41
bags, f.o.b. Washington, Pa. Langeloth, Pa.	$1.33

Simanal, 20% Si, 20% Mn, 20% Al, f.o.b. Philo, Ohio, freight allowed, per lb.

Carload, bulk lump	18.50¢
Ton lots, packed lump	20.50¢
Less ton lots	21.00¢

Vanadium oxide, 86-89% V_2O_5 per pound contained V_2O_5

$1.38

Zirconium, per lb of alloy

of alloy 35-40% f.o.b. freight allowed, carloads, packed	27.25¢
12-15%, del'd lump, bulk-carloads	9.25¢

Boron Agents

Borosil, per lb of alloy del. f.o.b. Philo, Ohio, freight allowed, B 3-4%, Si 40-45%, per lb contained B

2000 lb carload	$5.50

Bortam, f.o.b. Niagara Falls,

Ton lots per pound	45¢
Less ton lots, per pound	50¢

Corbortam, Ti 15-21%, B 1-2%, Si 2-4%, Al 1-2%, C 4-5-7.5%, f.o.b., Suspension Bridge, N. Y., freight allowed.

Ton lots per pound 14.00¢

Ferroboron, 17.50 min. B, 1.50% max. Si, 0.50% max. Al, 0.50% max. C, 1 in. x D, ton lots.... $1.10

F.o.b. Wash., Pa., Niagara Falls, N. Y., delivered 100 lb up

10 to 14% B	.85
14 to 19%	1.20
19% min. B	1.50

Grainal, f.o.b. Bridgeville, Pa., freight, allowed, 100 lb and over

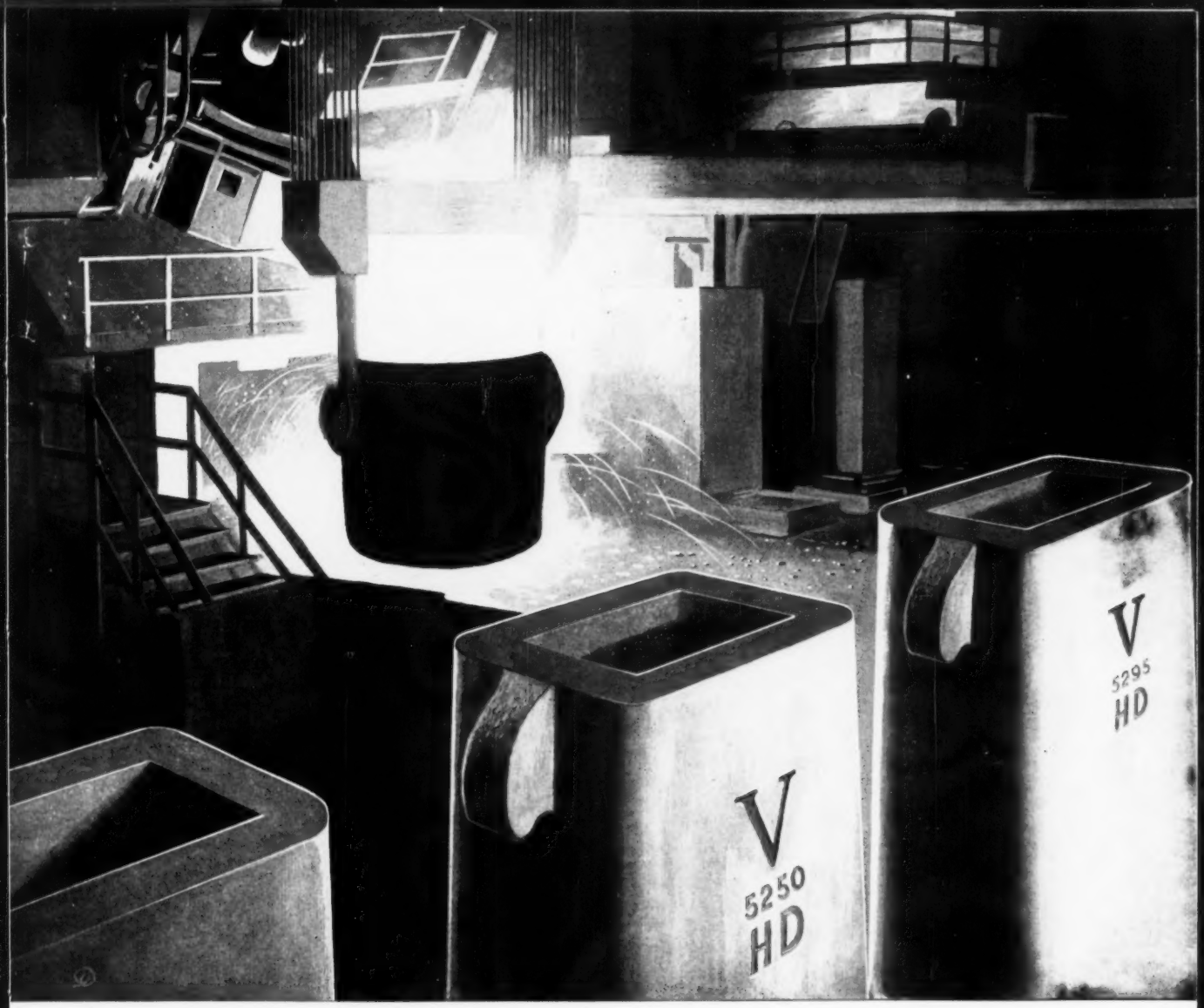
No. 1	$1.05
No. 79	50¢

Manganese-Boron, 75.00% Mn. 15.20% B, 5% max. Fe, 1.50% max. Si, 3.00% max. C, 2 in. x D, del'd.

Ton lots	$1.46
Less ton lots	1.57

Nickel-Boron, 15-18% B, 1.00% max. Al, 1.50% max. Si, 0.50% max. C, 3.00% max. Fe, balance Ni, del'd less ton lots

$2.15



All ingot moulds by Valley are designed for individual steel plant conditions. These moulds have been proven the highest quality available to the steel producing industry today.

VALLEY MOULD AND IRON CORPORATION

General Offices: Hubbard, Ohio

Western Office: Chicago, Illinois

Northern Office: Cleveland, Ohio

RAILWAY EQUIPMENT

FOR SALE

Used - As Is - Reconditioned

RAILWAY CARS

All Types

SERVICE-TESTED

FREIGHT CAR REPAIR PARTS

For All Types of Cars

LOCOMOTIVES

Diesel, Steam, Gasoline
Diesel-Electric

SPECIAL

STANDARD GAUGE CARS

10—Air-Operated, 30-Cubic Yard, Drop Door
SIDE DUMP CARS

ORE HOPPER CARS

20—40-Ton Capacity
COVERED HOPPER CARS

15—70-Ton Capacity

RAILWAY TANK CARS and STORAGE TANKS

6,000- 8,000- and 10,000-Gallon
Cleaned and Tested

CRANES

Overhead and Locomotive

IRON & STEEL PRODUCTS, Inc.

General Office
13496 S. Brainard Ave.
Chicago 33, Illinois
Phone: Mitchell 6-1212

New York Office
50-B Church Street
New York 7, N. Y.
Phone: BEekman 3-8230

"ANYTHING containing IRON or STEEL"

Summer Slump Grips Pittsburgh Area

Used machinery business there has been affected by job shop slowdowns, vacations and the hot weather.

Inquiries are high, however, and a pickup in September is looked for by dealers.

▪ The summer lull in used machine sales has hit Pittsburgh. Sales are off but the number of inquiries and the number of jobs pending indicate a coming strong pickup. And it will probably arrive earlier than usual.

Two factors are contributing to the current lag. First there is the normal slowdown of job shops during the summer months. Vacations, hot weather and a general summer attitude all contribute to the lull.

Little Mill Maintenance—In addition, this year has seen a departure from the normal summer practice of steel mills. Ordinarily the mills will use the slack warm months to take stock of their maintenance plant, buying and selling machines as needed. According to one machinery dealer, mills have been busier making steel this summer than anyone expected. There has not been the opportunity for the usual trading-off sessions.

While business is generally slow, there are a number of active areas. Large boring mills, horizontal and vertical, are always in good demand. Foreign demand for steel mill equipment continues strong. Shears, hot beds, bar mills and others are being exported.

Interest, Not Sales—The crane market is also active. Inquiries are coming in at a steady rate from Mexico, The South and other points. More cranes are coming on the market. Recent sales include a 20 ton unit with a 74 ft span and a small 5 ton model.

Apart from these areas, the current period is marked by a lot of interest but not too much buying. Prospects are not in a hurry to close sales. They are taking their time and shopping around.

This does not mean that the interest being shown is idle curiosity. Many of the shops in the area are seeking equipment for specific contracts. One plant is talking in terms of 10 new machines each running from $10,000 to $20,000. The purchase date will depend on when the contract is let.

September Pickup—There is a lot of this type work pending and most of it is due to start breaking in September. At that time, new defense contracts are expected to be awarded. Mining and construction people will be placing maintenance contracts. The large plants will get into more subcontracting.

Another field that will probably pick up in the early fall or sooner is electrical equipment. One dealer in motors and generators had a booming first half. Business hit an all-time peak in the first part of June. Then at the tail end of June there was a sharp decline in activity. July was very dead with sales running at low ebb.

Supplies of electrical equipment are called good but not excessive. In general machinery, the supply problem is the same; everyone is looking for large, late-model equipment.

CONSIDER GOOD USED EQUIPMENT FIRST

BENDER & STRAIGHTENER
Pels Type JH-26 Bends & Straightens Beams 15x5.84 #60 lb., Angles Equal 8x8x⅞", etc.
BENDING ROLLS
10' x 10 Ga. Bertsch Initial Type
10' x ½" Kling Pyramid Type—LATE
16' x ¾" Ransome, Pyramid Type
20' x 1" Hilles & Jones Pyramid Type
BRAKES—LEAF TYPE
8' x 3/16" Dreis & Krump
12' x ¼" Dreis & Krump
12' x ½" Dreis & Krump No. 228
BRAKES—PRESS TYPE
14' x ¼" Superior Hydraulic—NEW
100 ton Pacific Hydr. Model #100-6 Overall width 8', 24" Horn Extension.
CRANES—OVERHEAD ELECTRIC TRAVELING

3 ton P&H	50' Span	220/3/60
5 ton Whiting	48' Span	230/3/60 A.C.
5 ton Case	50' Span	220/3/25
8 ton P&H	55' Span	220/3/60
10 ton Shepard Niles	38' Span	440/3/60
15 ton Shepard Niles	52' Span	230 Volt D.C.
15 ton Shepard Niles	37' Span	220/440 A.C.
15 ton Shepard Niles	55' Span	220/440 A.C.
15 ton Niles	75' Span	220/3/60
20 ton P&H	57' Span	220/440 A.C.

DRAW BENCH
10,000# Aetna Standard Single Draw Tube Draw Bench 44 Ft. Max. Length of Draw
FORGING MACHINES
1" to 5" Acme, Ajax, National
LEVELERS—ROLLER
32" Torrington, 19 Roll 1-31/32" Dia. Backed up
42" Bliss Capacity .125" LATE
54 McKay, 17 Rolls, 3¾" Dia.
PLANER—PLATE EDGE
35" Southwark, 16 Pneu. Jacks, Capy. 1½"

HAMMERS—BROAD DROP—STEAM DROP—STEAM FORGING

800, 1600 lb. Chambersburg J-2	Board Drop
1200, 1500 lb. Chambersburg	Board Drop
2000 lb. Erie Type PV	Board Drop
2000 lb. Chambersburg Model E	Steam Drop
2000, 2500 lb. Erie	Steam Drop
3000 lb. Niles-Bement-Pond	Steam Drop
4000 lb. Chambersburg	Steam Drop
1100 lb. Erie Single Frame	Steam Forging
1500 lb. Chambersburg Sgle Fr	Steam Forging
20,000 lb. Massey Arch Frame	Steam Forging
18" x 18" Chambersburg	Cero Stamp

PRESSES—HYDRAULIC
1500 ton Mesta Steam Hydr. Forging Press
2000 ton Bliss Hydro-Dynamic, 18" Stroke Bed Area 54" x 55"
4500 Baldwin Lima-Hamilton Hydr. Forging Press
PRESSES—STRAIGHT SIDE
100 ton Clearing #1100, 14" Str. Bed 36"x36"
180 ton Hamilton #847, 12" Str. 8½" Bet. Ups.
250 ton Bliss #88 12" Str. Bed 29"x29"
250 ton Bliss #81 7½" Str. Blstr 33x39"
PRESSES—TOGGLE DRAWING
#3½ Bliss 125 ton, Bolster 19" x 26"
#1018 Bliss 550 Die Space 60" x 72"
PUNCH & SHEAR COMBINATIONS
Cleveland Style G Single End, 60" Throat
Cleveland Style W, 60" Throat
No. 1½" Buffalo Universal Ironworker
ROLLING MILLS
6" x 5" Torrington Wire Flattening Mill Line
10" x 14" Single Stand Two High
10" x 16" Single Stand Two High
12" x 12" Single Stand Two High
12" x 16" Single Stand Two High
16" x 30" Farrel Two Stand Two High
26" x 72" Cold Rolling Mill

SHEAR—ALLIGATOR
No. 4 Mesta RH LK. Capacity 2" x 12"
SHEAR—GATE
12' x ¾" Niagara Model 1212, NEW 1951
SHEAR LINES
36" Haltden Shear Line Leveler, Classifier, etc.
60" Shear Line, With Leveler & Tables
96" x 14 Ga. Cleveland, With Playoff, Leveller, Elect.
SHEARS—SQUARING
6' x 10 Ga. Niagara No. 672
8' x ¼" Niagara—NEW 1952
10' x ¼" Cincinnati #1810
10' x ¾" Cincinnati #2510
SHEARS—ANGLE
6 x 6 x ¾ Hilles & Jones
4 x 4 x 5/8" Long & Allstatter
SLITTERS
24" Yoder Slitting Line
36" Paxon Slitting Line
42" Illinois, 1¾" Shaft Dia.
STRAIGHTENERS
No. 5 Medart 5 Roll Capacity to 4½" Tubing
Kane & Roach Roll Straightener & Cut-off Capacities ⅞" to ⅞" Hex. Bars
SWAGING MACHINES
#4 Fenn, Capacity 2¼" Tubing, LATE
#6½A Fenn, Capacity 2¾" Tube 3¾" Solid 10" Die Length Hydraulic Feed. LATE
WELDERS—SEAM
200 KVA Progressive Universal 220 Volt
400 KVA Federal Circular 440 Volt
500 KVA Federal Longitudinal 440 Volt
WIRE MACHINERY
#2 Vaughn 12-Die Continuous Wire Drawing Machine, Capacity 14 to 27 B&S Ga.
4—Block Vaughn Wire Drawing Machine 22" Diameter Blocks

● Manufacturing

A. T. HENRY & COMPANY, INC.

50 CHURCH ST., NEW YORK CITY 8
Telephone COrtlandt 7-3437

Equipment ●

Confidential Certified Appraisals
Liquidations — Bona Fide Auction Sales Arranged

Consulting Engineering Service
Surplus Mfg. Equipment Inventories Purchased

2000# Chambersburg Pneumatic Forging Hammer Late Type, Serial 20CH392L7.
4000 lb. Chambersburg Double Frame Steam Forg. Hammer
2500 lb. Erie Single Leg Steam Forg. Hammer
No. 7 Ajax Forging Press, 700-ton capacity
3—2-ton Denison Auto. Hopper Feed & Index Table Hydr. Multipress
25 Transformer and Generating Arc Welders
2500 lb. Model E Chambersburg Steam Drop Hqmmer, New 1944
6' x 10 ga. Cincinnati Squaring Shear
¼" x 8' Pexto Gate Shear; 20" throat
4" National High Duty Upsetting & Forging Machine, air clutch, also one with regular clutch, also 1", 2", 3" air clutch
Williams White Bulldozers from 5-ton to 300-ton
Landis Landmaco and other Landis Threading Machines
Single & Double End Punches
No. 3 Motch & Merryweather Saw, with Saw Grinder
Conomatic, 4 Spin. Cap. 1½" Rd.

BOLT, NUT AND RIVET MACHINERY, COLD HEADERS, THREAD ROLLERS, THREADING MACHINES, TAPPERS, COLD BOLT TRIMMERS, SLOTTERS, HOT HEADERS AND TRIMMERS, COLD AND HOT PUNCH NUT MACHINES.

DONAHUE STEEL PRODUCTS CO.
1919 W. 74th Street, Chicago 36, Ill.

REBUILT — GUARANTEED ELECTRICAL EQUIPMENT

MOTOR GENERATOR SETS

Qu.	KW	Make	RPM	D.C. Volts	A.C. Volts
5	1500	Al.Ch.	514	350/700	13800/6900/4160
1	1500	G.E.	514	250	2300/4000
1	1450	Whse.	900	600	2300/4000
2	1250	Al.Ch.	720	600	2300/4000
1	850	G.E.	720	240/350	2300
1	725	Whse.	900	600	2300/4000
1	500	Cr.Wh.	720	600	2300/440
1	500	G.E.	900	250	2300
4	300	Whse.	1200	125/250	2300
1	300 (3-unit)	Al.Ch.	1200	250/300	2300
2	200	Whse.	1200	125/250	2300/440
2	150	Rel.	1200	125	2300/440
1	150	Whse.	1200	125/250	2300/440
1	150	G.E.	1200	250	4600/2300
1	100	Whse.	720	125/250	220
1	75	Whse.	1200	125/250	2300

2—400 KW, G.E. sealed Ignitron Mercury Arc Rectifiers complete with AC and DC switchgear and 475 KVA Pyranol Transf. 2400 V, 3 ph., 60 cycle.

DIRECT CURRENT MOTORS
230-Volt

Qu.	H.P.	Make	Type	R.P.M.
1**	1500	Whse.	Encl.	600
1**	700	Whse.	Encl.	143
1	700	Whse.	Encl.	300/700
2**	600	Whse.	Mill	300/1600
2	600	Whse.	QM	110/220
1	400	G.E.	MPC	450
1	300	Whse.	Mill	300/900
1	300	Whse.	Mill	300
2	275	Whse.	QM	425/850
1	200/250	El.Dy.	Ped. Brg.	400/1200
1	180	G.E.	MPC	400
1	175	G.E.	CD-175-A	850/1025
1	125	Whse.	SK-184	575/850
1	80	Rel.	651-T	575/1150
1	80	El.Dy.	25-S	525/1050
1	60/75	Whse.	SK-151	250/1000
1	50	Whse.	SK	500/1500
1	50	Whse.	SK-141	250/1000
2	30/40	Whse.	SK-143	500/1500
1	35	Whse.	SK	250/1000
1	32½	Whse.	SK-150	400/1200
1	25	Whse.	SK-121	200/1200
2	15	Whse.	SK-93	575/1725
3	5/7½	Rel.	T.E.F.C.	337/1350

**—600 volts
All others—230 volts

T. B. MAC CABE COMPANY
4302 Clarissa St., Philadelphia 40, Penna.
Cable Address "Macsteel" Philadelphia, Pa.
Phone Davenport 4-8300

RE-NU-BILT
GUARANTEED
ELECTRIC POWER EQUIPMENT
A. C. MOTORS
3 phase—60 cycle

SLIP RING

Qu.	H.P.	Make	Type	Volts	Speed
2	1750	G.E.	M-579BS	4800	1800
1	1500	G.E.	MT	6600	1187
1	1100	F.M.	OVZK, B.B.	4800	1800
1	800	G.E.	MT	2300	293
1	750	G.E.	MT-573	2200	1190
1	700	A.C.		2300	500
1	500	Whse.	CW	550	250
1	400	Whse.	CW	440	514
1	250	Cr.Wh.	Size 71	208/416	1765
1	350	G.E.	IM-17A	440/2200	720
1	250	G.E.	MT-124Y	4000	257
1	250	Cr.Wh.	Size 290	2300	350
1	250	Al.Ch.		550	600
1	200	G.E.	IE13-B-M	220/440	1760
1	200	G.E.	MT-557Y	220/440	1760
1	200	Cr.Wh.	206H	440	565
1	200	G.E.	IM	440	435
3	200	G.E.	I-17AM	2200	435
1	200	G.E.	IM	2200	580
1	150	Unused	Whse. CW	2300	435
1	125	A.C.		440	865
1	125	Al.Ch.		440	720
1	100	G.E.	IM-10	2200	435
1	100	G.E.	IM	440	600
3	100	A.C.	ANY	440	695

SQUIRREL CAGE

1	800	G.E.	KT-575	2200	1180
1	650	G.E.	PT-559BY	440	3570
3	500	Whse.	CS-1216	2200	500
2	450	Whse.	CS-1420	2300/4150	354
1	400	G.E.	IK	2200	500
1	300	G.E.	KT-559A	2300	1775
1	200	G.E.	IK-17	440	580
2	200	G.E.	KT-557	440	1800
1	150-75	G.E.	IK	440/880	440
1	150	Whse.	CS8568	440	880
1	150	Whse.	CS	440	580

SYNCHRONOUS

Qu.	H.P.	Make	Type	Volts	RPM
1	7000	G.E.	ATI	2200/6600	600
3	4850	C.W.	3501SL	4000/6900/13800	514
1	2250	Whse.	Sp.f.	2300/4000	514
1	2500	Whse.	Sp.f.	2300	720
1	2400	Whse.		2300	120
2	1750	G.E.	ATI	2300	3600
1	735	G.E.	ATI	2200/12000	600
1	450	Whse.		2200	128.5
1	325	G.E.	ATI	440	1800
1	225	G.E.	ATI	440	1800
1	100	G.E.	TS-7556	220/440	900

BELYEA COMPANY, Inc.
17 Howell Street, Jersey City 6, N. J.

Compressor, 5HP Brunner 150# Tank Mounted
Leveller, 3" x 30" Fessler Backed Up Type
Metallograph, B&L Mils, 5" x 8" Camera
Riveter, 50 Ton Hanna Hyd., 8"R x 16"G 10 HP
Rolling Mill, 20" x 30" United 2HI, RLR BG
Rolling Mill 6" x 8" Standard 061, RLR BG
Rolling Mill 6" x 5" Std Grading, RLR BG

F. H. CRAWFORD & COMPANY
30 Church Street — New York 7, N. Y.

BENNETT MACHINERY CO.

800 TON NILES WHEEL PRESSES
(2) Late Type 800 ton Wheel Presses, 96" between bars; max. dist. ram and resistance head 9'3" wgt. each 65,000 lbs.
(1) 32" Ohio Dreadnaught Shaper, M. D.

375 Allwood Rd., Clifton, New Jersey
Phone: PRescott 9-8996 — N. Y. Phone: LOngacre 3-1222

6' x ¼" Lown Initial Type Bending Roll, M.D.
No. ½, No. 1½ Buffalo Forge Univ. Ironworkers, Coper, Notcher, M.D.

FALK MACHINERY COMPANY
16 Ward St. — Baker 5887 — Rochester 5, N. Y.

CALL Curry!

FOR SURPLUS STEEL PLANT EQUIPMENT

AVAILABLE EQUIPMENT

2—18" & 37" x 36" 4-HI HOT STRIP MILL STANDS complete with Rolls, Chocks, Bearings, Spindles, Pinion Stand, Motor-Operated Screwdown, etc.

1—BAR MILL—consisting of 2-Stands 16" 3-Hi Mills with AC Motor and Gear Drive, Pinion Stand, Rolls, etc. 4-Stand (3—3-Hi and 1—2-Hi) AC Motor, Pinion Stand, Rolls, etc. Hot Run-Out, Shears, Saws, Straighteners, etc.

1—BAR MILL—consisting of 3-Stands 3-Hi 12" Mills, Top & Bottom Screws, Housing Fillings, Bed Plate, Spindles & Coupling Boxes, Pinion Stand and 750 H.P. DC Motor.

Write for the Curry List of available steel plant equipment

1—#3½—42" Yoder SHEET SLITTER. New 1948. Arbors—6" diameter. Complete with Entry & Delivery Pinch Rolls. Including 65 Knives (practically NEW) and 150 Spacers Capacity—4 cuts in ¼" mild steel.

1—36" Paxson SLITTING LINE. Complete with Pay-Off Reel, Slitter, Re-coiler, Scrap Bailer, Motor-Generator Set & Controls. Slitter Arbors—4½" diameter. Capacity—4 cuts in 3/16" mild steel.

1—⅜" x 53" CUT-TO-LENGTH LINE. Including Pay-Off Reel, 5-Roll Leveller (6½" Diameter rolls) with Pinch Rolls, Loop Table, Up-Cut Shear, Run-Out Table and Electrics & Controls.

1—42" BACKED-UP ROLLER LEVELLER, McKay, Rolls 2½" diameter x 42" face. Including AC Motor and Controls.

1—2000 H.P., General Electric MOTOR, Slip Ring, 3-60-2300 volts, 237 RPM. Complete with Controls.

1—2000 H.P. Mesta GEAR REDUCTION UNIT, Ratio 10 to 1. 23.7 RPM Output.

1—DOUBLE HEAD GAG PRESS. Manufactured by Sutton Engineering, 1945. Model K-350. Capacity 1½" square.

ALBERT Curry & CO. INC.
STEEL PLANT EQUIPMENT
941 OLIVER BUILDING · PITTSBURGH 22, PENNA.
Phone ATlantic 1-1370
Cable Address: CURMILL-PITTSBURGH

CHECK THIS PARTIAL LIST OF HIGH GRADE TOOLS

100 KVA Taylor Winfield portable spot welder, practically new
50 KW Sciaky Dynatrol automatic cycle press type spot welder
7½" National high duty air clutch forging and upsetter
4" National high duty upsetting and forging machine, late (2)
3"-3½" Ajax upsetting and forging machine, steel frame
3" National high duty upsetter, air clutch
3" Ajax upsetter, air clutch
1½" National upsetting and forging machine, hardened ways (2)
9/16" National precision thread rolling machine, MD, late
Economy Type R automatic threading or pointing machines, 1948 (2)
36" Rockford openside universal shaper planer, mechanical
10½" x 10½" No. 3 Motch & Merryweather cold saw, late, MD
10" x 10" Racine hydraulic Shear-Cut metal saw
No. 1-L Kane & Roach vertical type horizontal shaft bending roll
No. 1B Kane & Roach straightening roll
750 ton No. 3 National Maxipress, air clutch, new 1945
60 ton Henry & Wright high speed dieing press
56 ton U-56 Niagara steel frame solid knee punch press
60 ton No. 600 B Perkins OBI press, new 1950
800 ton Model 2E48-800 Hamilton straight side single crank, air clutch
250 ton Williams White & Co. four post upward working hydraulic press
150 ton HPM Hydro-Power Fastraverse hydraulic press
350 ton No. 18T Cleveland single crank double action toggle drawing press
260 ton No. 795½-72 Toledo double crank toggle drawing press
200 ton 7-72" Bliss double crank straight side tie-rod frame press
126 ton Model 60-D-66 Cleveland straight side double crank tierod frame single geared press
500 ton No. 664 Toledo tierod frame knuckle joint coining press
400 ton No. EG 54 Ferracute upward working coining press
60 ton No. 605 General Flexible power and straightening press
30" x 30" x 8' Cincinnati Hypro 2 rail, one right hand side head, dial feed planer
Economy type KK automatic bolt head shaving and pointing machine
48" Newton two spindle continuous rotary mill
Hall Planetary thread and circular form milling machine

Ask for your list No. 206.

MILES MACHINERY CO.
PHONE SAGINAW PL 2-3105
2041 E. GENESEE AVE. SAGINAW, MICH.

eastern Rebuilt Machine Tools

THE SIGN OF QUALITY—THE MARK OF DEPENDABILITY

ENGINE LATHES
20"x10' centers Boye & Emmes, 1 year old
24" actual swing 25"x120" centers New Haven Loose Change, cone
25"x49" centers LeBlond Geared Head, m.d., taper
25"x84" centers Reed Loose Change, cone
25"x120" centers LeBlond, m.d., taper
25"x20' centers Boye & Emmes, 1 year old
27"x96" centers American H.D., m.d., late
30"x76" centers Niles-Bement-Pond, m.d., taper
42"x31'—1½" centers, American H.D., m.d.
42"x85½" centers American, m.d.

MANUFACTURING LATHES
12x53" 20"x25" Jones & Lamson Fay Automatic Lathes, 1944
12x18" Reid Small Piece Production Lathe, Model 6WSL, m.d.
No. 3 Lodge & Shipley Duomatic, m.d., late type
No. 4 LeBlond Boring Lathe, 37' bed, 4" hole, m.d., latest
No. 9, 12 LeBlond Multi-Cut, m.d.
No. 16 LeBlond Automatic, m.d.
4x50" LoSwing, m.d.
8x132" LoSwing, m.d., latest
11x18" LeBlond Rapid Production, m.d.
12x18" centers Monarch Model 5T, m.d.
Model U, 14"x24" centers, LoSwing, m.d.
No. 12 Gisholt Semi-Special Automatic Production, m.d.
No. 9WSL Reid Production
17"x75½" LeBlond, m.d.
No. 10 Sundstrand Automatic Production Lathe, m.d.
No. 12 Sundstrand Automatic Production Lathe, m.d.
14"x21' centers Model LS Semi-Automatic LoSwing, m.d.
12"x24" centers Sim Mfg. Type Turning Lathe m.d., in base

UNIVERSAL MILLING MACHINES
No. 2 Brown & Sharpe Light Type, flanged m.d.
No. 4A Brown & Sharpe Heavy Duty, m.d.
No. 4 Cincinnati High Power, m.d.
No. 2AU Garvin Universal Mfg. motorized, 4 spindle Western Drive Unit

PLAIN MILLING MACHINES
No. 1B Milwaukee, m.d. in rear
No. 2 Cincinnati H.S., m.d.
No. 2K Kearney & Trecker, m.d.
No. 2B Brown & Sharpe, m.d.
No. 3B Brown & Sharpe, m.d.
No. 3B Milwaukee, m.d.
No. 4B Brown & Sharpe, m.d.
No. 5 Cincinnati H.P., m.d., late
No. 2LP Van Norman, m.d.
No. 12 Van Norman Ram Type, m.d., with 2 A.C. motors
No. 2MH Cincinnati, m.d.

We carry an average stock of 2,000 machines in our 11 acre plant at Cincinnati. Visitors welcome at all times.

THE EASTERN MACHINERY COMPANY
1002 Tennessee Avenue, Cincinnati 29, Ohio
MElrose 1241 "TWX" CI 174 CABLE ADDRESS—EMCO

#300 Hanchett Vertical Surface Grinder Serial #300-17 capacity 13" x 72".

Cleveland Punch and Shear Model ER-34" throat.

No. 47 Heald Single End Boramatic #Serial 4646.

Late Type 4" Bar Sellers Heavy Duty Table Type Horizontal Boring Mill Serial No. 1318.

25" x 96" Landis "C," 1943 Cylindrical Grinder Serial #27527.

Hazard Brownell Machine Tools, Inc.
350 Waterman St. Providence 6, R. I.
Dexter 1-8880

COMPRESSORS
1902-1957
World's Best Rebuilts

66 CFM 125 psi 5 x 9 Ing. ESI St. Booster
138 CFM 100 psi 7 x 7 Ing. ESI
184 CFM 135 psi 8 x 9 Chic-T
234 CFM 100 psi 9 x 9 Ing. ESI
266 CFM 500 psi 10-4½ x 10 Ing. XOB
368 CFM 100 psi 12 x 10 IR-CP-Penn
420 CFM 40 psi 12 x 9 Ing. ES-Oil-Less
465 CFM 100 psi 12 x 11 Penn 3AT Gardner X
528 CFM 100 psi 14 x 12 IR-CP-Penn
585 CFM 100 psi 15-9¾ x 12 IR-XRE 3-60-4160
660 CFM 50 psi 15 x 11 Werth. HB or HS
676 CFM 100 psi 15-9½ x 12 Ing. XRB
877 CFM 100 psi 17-10½ x 14 Ing. XRB
1050 CFM 100 psi 18-11 x 12 Penn DE2 3-60-2300
1385 CFM 100 psi 13-8 x 7 Joy WN114-3-60-440
1721 CFM 100 psi 23-14 x 16 Ing. PRE2 3-60-2300
2900 CFM 100 psi 29-16 x 21 Ing. PRE2 3-60-2300
3460 CFM 100 psi 23-13 x 18 CP OCTDE 3-60-2300
5748 CFM 50 psi 29-29 x 21 Ing. PRE1 3-60-2300
PORTABLES—60-800 CFM Rotary or reciprocating

AMERICAN AIR COMPRESSOR CORP.
DELL & 8TH STREET
NORTH BERGEN, N. J.
Telephone UNion 5-4848

FOR SALE
COMPLETE BAR & ROD ROLLING MILL IMMEDIATELY AVAILABLE
Suitable for Rolling Steel or Copper billets down to bar or rod sizes, including hotbed, shears, and rod coiler.
STILL SET-UP, REASONABLY PRICED FOR IMMEDIATE SALE
NATIONAL MACHINERY EXCHANGE
126 Mott St. New York 13, N. Y.
CAnal 6-2470

One Type 6 4233 CU Hevi-Duty Bill Furnace and Equipment. 125 KW, 440 V 3 Phase 60 Cycle with Inconel Retorts 50" ID x 70" High. 2100°F Operating Temperature. New March 1955.

One 240 KW, 3 Phase 60 Cycle, 440 Volt Continuous Special Atmosphere Wire Mesh Belt Conveyor Type Electric Heating Furnace. Inside Clearance 18" High x 4'3" Wide, 2040°F Operating Temperature. New October 1955.

One 3000 CFH Electric Furnace Co. Ammonia Dissociator Unit Complete with Controls. New 1955.

These almost new furnaces are available at considerable savings. For further information write

BOX G-588
Care *The Iron Age*, Chestnut & 56th Sts., Phila. 39

GOOD *Quality* TOOLS

10" Model EE and 12" Model C MONARCH Toolmaker's Lathes

Nos. 3 and 5 JONES & LAMSON Ram Type Universal Turret Lathes

16" x 16" x 48" THOMPSON Type C Hydraulic Surface Grinder

400 ton BLISS Knuckle Joint Presses, new 1949

24" x 24" x 6' GRAY D. H. Planers, 2 heads, M.D. Late

WIGGLESWORTH
INDUSTRIAL CORPORATION
62 Border Street E. Boston, Mass.

PLANER, ROTARY
60" NILES-BEMENT-POND

Mounted on Turn Table 10' Travel
A.C. Motor & Controls
With Tool Grinder

IMMEDIATE DELIVERY

LANG MACHINERY COMPANY, INC.
28th St. & A.V.R.R. Pittsburgh 22, Pa.

CONVEYOR FURNACES

2—Holcroft Electric Processing Furnaces, 24" Roller Conveyor type, 76' long, 2000°F with 25 KVA Transformers, Reactors, Control Panels, etc. Excellent Condition. Built 1947. Attractively Priced.

BRILL EQUIPMENT CO.
2401 Third Ave., New York 51, N. Y.
Tel.: CYpress 2-5703

W & W No. 2 Hyd. Tube Bender.
Cinn. 6' x 1/4" Brake, New.
Eastman 14" Comparator with gear analyzer, floor type, 1954.
Besley No. 372 Vert. Grinder, 1947.

D. E. DONY MACHINERY CO.
4357 St. Paul Blvd. Rochester 17, N. Y.

LIFTING MAGNETS

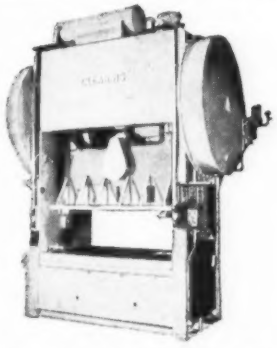
A complete magnet service. Magnets, new & rebuilt, generators, controllers, reels, etc.

Magnet specialists since 1910

Goodman Electric Machinery Co.
1060 Broad St. Newark 2, N. J.

WORLD'S LARGEST STOCK
STAMPING PRESSES

BLISS • CLEARING • CLEVELAND
FERRACUTE • HAMILTON • L & J
NIAGARA • TOLEDO • V & O



SQUARING SHEARS • PRESS BRAKES
REBUILT *and* GUARANTEED

JOSEPH HYMAN & SONS
TIOGA, LIVINGSTON & ALMOND STS.
PHILADELPHIA 34, PA. *Phone* GArfield 3-8700

FOR SALE

2 800 pound Erie Steam Forging Hammers
1 1500 pound Erie Steam Forging Hammer
1 1500 pound Chambersburg Steam Forging Hammer

Operating condition — Surplus account change in manufacturing arrangements. Available for inspection now.

American Hoist & Derrick Company
W. R. Sprague, Director of Purchases
63 South Robert Street
St. Paul 7, Minnesota

EXTRUSION PRESS

1650 Ton Loewy Hydropress Extrusion Press for Extruding 6" Dia. x 26" Long Billets.

TIPPINS MACHINERY COMPANY
1001 Washington Blvd. Pittsburgh 6, Pa.
EMerson 1-3400

UNIVERSAL
MACHINERY & EQUIPMENT CO.

MELTING FURNACES
3 KW AJAX Spark Gap Converter
20 KW AJAX Melting Unit
50 KW INDUCTION FURNACE
250 lb. LECTROMELT Arc Melting Furnace
1½ Ton LECTROMELT Arc Melting Furnace
1500 lb. HEROULT Arc Melting Furnace

SPECIAL
5 Ton Hydraulic Top Charge SWINDELL—Like New

HEAT TREAT FURNACES
DESPATCH pit-type gas hardening furnace
1—Gas Fired, 5'6" x 8' I.D. Pit
1—L.&N. 25 KW Homocrab Furnace
1—L.&N. 75 KW, 25" x 48" Electric Pit

CLEANING EQUIPMENT
15" Cont. AMERICAN Tumblast, 4 tons per hour
36" Cont. AMERICAN Tumblast, 15 tons per hour
36 x 42 WHEELABRATOR w/skip loader
48 x 42 WHEELABRATOR w/skip loader
48 x 48 WHEELABRATOR w/skip loader

AMERICA'S LARGEST STOCK OF FOUNDRY EQUIPMENT

1630 N. NINTH ST., READING, PA.
Phone: FRanklin 3-5103

TOTAL OF 17,500-KW IN M.G. SETS

5—3500-KW, 3 Unit, Allis-Chalmers, Motor Generator Sets. Each consisting of:
2—1750-KW, 250/350 Volts parallel, 500/700 Volt series, 514 RPM, 5000 Amp., type HCC, rated continuous at 40 Deg. C. Allis-Chalmers DC Generators with Class B Insulation, separately excited, direct connected in the center to:
1—5000-H, 3730-KW, 13800 Volts (6900 volts), 3 Phase, 60 cycle, 514 RPM, 162 Amps. Allis-Chalmers Synchronous Motor with Class B Insulation, rated continuous at 40 Deg. C. Rise.
Each set equipped with a 40-KW exciter for synchronous motor fields, and a 10-KW exciter for generator fields, both 250-VDC at 514 RPM.
All mounted on a structural steel base approximately 27' long x 11' wide.
These Units are of the very latest type and design—condition excellent—were used only a short time—AC and DC Switchgear available. For any additional information and price, please contact one of the following dealers closest to you:

T. B. MacCabe Company
4300 Clarissa Street, Philadelphia 40, Pa.
Moorhead Electrical Machinery Co.
120 Noblestown Road, Oakdale (Pittsburgh District) Pennsylvania
Brazos Engineering Co., Inc.
P. O. Box 9114, Houston, Texas
Duquesne Electric & Mfg. Co.
6428 Hamilton Avenue, Pittsburgh 6, Pa.

POWER EQUIPMENT CO.
Offers
BARGAIN PRICES
ON GUARANTEED NEW and Rebuilt MOTORS!

AUGUST SPECIALS
NEW MOTORS

HP	Make	Type	Speed
50	Wagner-TEFCBB	CP-504	900
40	Wagner-TEFCBB	CP-405	1800
20	Wagner-TEFCBB	CP-444	900

Send for our FREE Catalog

Cash for your surplus new & used electric equipment. Send your list today.

Large line of motors, control equipment, AC & DC Generators, MG sets and transformers.

Phone or Wire Us Collect
POWER EQUIPMENT CO.
8 Cairn St., Rochester 2, N. Y.
Phone Genesee 8-5629

Gemar *Associates*
CONSULTING
MATERIALS HANDLING
ENGINEERS
over 25 years experience
GREENWICH, CONNECTICUT

BENKART STEEL & SUPPLY COMPANY
CORAOPOLIS, PENNSYLVANIA
AMherst 4-1250

Dealers in new and used OET Cranes and Structural Steel Buildings.

Send us your inquiries.

BEST BUY OF THE WEEK!

Morton 60" Flash Trimmer—open throat—late model

STROM MACHINERY CORP.
1826 Sumner St., Hammond, Ind.

RAILROAD EQUIPMENT For Sale

REBUILT– REPAIRED OR "AS IS"

Immediate Delivery on:
Hopper • Tank • Flat • Gondola
Caboose and Special Designed Cars
Locomotives and Loco. Cranes

All work executed on cars in our modern, well-equipped plant

40 YEARS OF EXPERIENCE
Your Assurance of Satisfaction

RAIL & INDUSTRIAL EQUIPMENT CO., INC.
30 Church Street, New York 7, N. Y.
RR Yard & Shops, Landisville, Pa.

FOR SALE

Approximately
2000 STEEL PALLETS
32" x 42" x 8½"
Approximately 130 pounds each
Five cents per pound, F.O.B. Detroit

UNITED METALS REFINING COMPANY
1641 CANIFF, DETROIT 12, MICHIGAN
TOWNSEND 8-5990

Keep 'em rolling . . . not rusting

FOR SALE

New—Used—Reconditioned railroad freight cars • car parts • locomotives • tank cars • steel storage tanks

MARSHALL RAILWAY EQUIPMENT Corporation
328 Connell Building, Scranton 3, Pennsylvania
Diamond 3-1117 Cable MARAILQUIP

FOR SALE

25 ton Ohio Diesel Locomotive Crane. New 1947. Caterpillar D-13000 Engine. Excellent Condition.

35 ton Ind. Brownhoist Diesel Locomotive Crane. New 1943. Caterpillar D-13000 Engine. 15 kW Magnet Generator. Excellent.

50 ton Whitcomb Diesel Electric Locomotive 300 HP Cummins Engines. New 1943. Reconditioned.

65 ton Atlas Diesel Electric Locomotive 400 HP Cummins Engine. New 1942. Reconditioned.

115 ton Alco Diesel Electric Locomotive 1000 HP. New 1941.

Mississippi Valley Equipment Co.
501 Locust St. St. Louis 1, Mo.

Save $35,000 over new . . .

LOCOMOTIVE CRANE

1944 Ohio—30 ton climax engine 50' boom — excellent con. — can demonstrate in Baltimore.

BRIGGS & TURIVA
REBUILT FREIGHT CARS
RAILROAD EQUIPMENT
P. O. Box 27 OXford 5-7392
IMPERIAL, PA.

Railroad Freight Cars — Gondola, Box and Flat Cars. Tank Car Tanks — 8000 gallon. Steam Locomotive Crane. Rails.

Consolidated Ry. Equipment Co.
6702 So. Cicero Ave., Chicago 38, Ill.

FOR SALE

FREIGHT CAR REPAIR PARTS
RELAYING RAILS & ACCESSORIES
STEEL STORAGE TANKS
FRT. CARS & LOCOMOTIVES
CONTRACTOR EQUIP. & MACHINERY

THE PURDY CO.
8754 S. DOBSON AVE.
CHICAGO 19, ILL. — BA 1-2100
ALSO ST. LOUIS, MO., SAN FRAN. AND LONG BEACH, CALIF.

Save on Your INDUSTRIAL TRACK

FULLY GUARANTEED

FOSTER *QUALITY* **RELAYING RAILS**

Handle more cars better—cost less to install and maintain. Foster stocks all Rail Sections 12# thru 175#, Switch Material and Track Accessories.

SEND FOR CATALOGS

RAILS • TRACK EQUIPMENT • PIPE • PILING
L.B. FOSTER CO.
PITTSBURGH 30 • NEW YORK 7 • CHICAGO 4
ATLANTA 8 • HOUSTON 2 • LOS ANGELES 5

CRANES

BOUGHT & SOLD

ENGINEERED TO YOUR REQUIREMENTS

Ornitz Equipment Corp.
Industrial Engineering Service
220 3rd Ave. Brooklyn 17, N. Y.
TRiangle 5-2553

OFFERING

BRIDGE CRANES

ARNOLD HUGHES COMPANY
2765 Penobscot Bldg. Detroit, Mich.
WOodward 1-1894

OVERHEAD CRANES & HOISTS

120-ton Morgan 65' Span, 2—60-ton trolleys, 230 VDC.
15-ton Whiting 50' span, 440/3/60 cy.
10-ton Shepard, 39'9" span, 229/3/60 cy. push button floor controlled.
10-ton Morgan, 40" span, 230 VDC.
100 other cranes various spans and currents.

JAMES P. ARMEL, Crane Specialist
716 House Bldg. Pittsburgh Pa.
Tele. GR 1-4449

RAILS—All Sections

NEW RELAYING—All Accessories
TRACK EQUIPMENT, FROGS—CROSSINGS—TIE PLATES, CONTRACTORS AND MINE & MINING MACHINERY CARS

M. K. Frank
Grand Central Palace, New York
401 Park Bldg., Pittsburgh, Pa.
105 Lake Street Reno, Nevada

BENDING ROLL

12' x 1½" Cleveland Plate Bending Roll Pyramid Type, Drop End—40 HP Motor

TIPPINS MACHINERY COMPANY
1001 Washington Blvd. Pittsburgh 6, Pa.
EMerson 1-3400

MACHINES FOR YOUR YARD
Quickway "F" & 29" magnet
7½ KW generators for magnets
Pioneer 30"x200' conveyor
Pioneer 3x10 d.d. screen
Iowa 16x16 roll crusher
American 24B-28 car puller
TRACTOR & EQUIPMENT CO.
10006 Southwest Highway, Oak Lawn, Ill.

SHEARS: #1 thru #8
DS BALERS: 36" thru 72"
MAGNETS: 24" thru 65"
CRANES: var. makes, sizes, eq. for mag. use
H. GREENBERG
Ph. 194 Murphysboro, Ill.

FURNACES LIKE NEW
SURF. COMB. 3 Row Push. Carb. Rad. Tube. 80" W, 29' L, 20" H. Trays 26" x 26".
SURF. COMB. 3 Row Push. Draw. Recirc. 80" W, 29' L, 20" H. Trays 26" x 26". 1250°F.
HOLCROFT, Pusher, Clean Hard, Gas Rad. Tube. 28" W, 21' L, 18" H. 1700°F + Endo. Gen. Trays 15" x 24".
HOLCROFT, Pusher, Carb. 2 Row, Gas Rad. Tube. 45" W, 37' L, 18" H. 1750°F + Endo. Gen. Trays 16" x 20".
HOLCROFT, Pusher, Draw. Gas. Recirc. 5'6" W, 36' L, 6'6" H. 1250°F.
HOLCROFT, Pusher, Draw. Gas. Recirc. 5'6" W, 16' L, 28" H. 1250°F.
AMER. GAS Rotary Retort, Mod. 28. 15" Dia. x 48" deep. 1850°.
PAPESCH & KOLSTAD, INC.
18707 Capitol Ave. P.O. Box 3726
Oak Park (Detroit 37), Michigan
Phone: Lincoln 7-6400

FOR SALE
1—Angle Beveler
1—Shaper
2—Planers
1—Engraving machine
1—Turret Lathe
1—Nut Threading Machine
If interested call or write
E. E. WILMOTH
New York Shipbuilding Corporation
Camden 1, N. J.
Phone: WOodlawn 3-6700

GEM INSULATING FIREBRICK
★
THE GEM CLAY FORMING CO.
SEBRING, OHIO

CONTRACT MANUFACTURING

OLSON
SCREW MACHINE PRODUCTS
Made to your specifications and tolerances. From smallest up to 2⅝" diameter in steel, brass and aluminum.

OLSON MANUFACTURING CO.
101 Prescott St., Worcester, Mass.

MEEHANITE® METAL CASTINGS
ROUGH OR MACHINED
ONE TO 60,000 POUNDS
FOR
STRENGTH — ABRASION
CORROSION OR HEAT
ROSEDALE
FOUNDRY & MACHINE CO.
1735 PREBLE AVE., PITTSBURGH 33, PA.

THE FORMULA:
Multi-operation presses
plus
Yankee skilled workmen
over
Eighty years manufacturing
know-how equals
Low cost metal stampings
And precision assemblies
To meet your needs
The GREIST MANUFACTURING CO.
646 Blake St., New Haven 15, Conn.

MEEHANITE®
and NI-HARD CASTINGS
▼
PATTERNS
▼
MACHINE and PLATE SHOP WORK
▼
CUSTOM-BUILT MACHINERY
HARDINGE MANUFACTURING CO.
240 ARCH ST., YORK, PA.

STANDARDIZE WITH
STANDARD
MADE TO YOUR SPECIFICATION
STEEL TUBING
CARBON • ALLOY AND STAINLESS
SEAMLESS OR WELDED
PRESSURE AND MECHANICAL
MILL OR WAREHOUSE QUANTITIES
STANDARD TUBE SALES CORP.
76-01 WOODHAVEN BLVD. • BROOKLYN 27, N. Y.

SPECIAL MACHINERY
DIAMITE *Abrasive Resistant* Castings
NI-RESIST *Heat & Corrosion Resistant* Castings
P M G BRONZE *High Strength Acid Resistant* Castings
Fully Equipped—Pattern Foundry & Machine Shop Facilities—Castings to 15 tons.
Weatherly Foundry & Mfg. Co., Weatherly, Pa.

Nepsco
NEW ENGLAND PRESSED STEEL COMPANY
Contract Manufacturer since 1914
METAL STAMPINGS
SPECIALTIES — APPLIANCES
For Industrial and Domestic Users
P. O. BOX 29
NATICK MASSACHUSETTS

Special Washers
We carry in stock Silicon killed steel specially suited for case-hardening. Stock dies for producing washers from .0015 to ½" thick.
Thomas Smith Company
294 Grove St., Worcester, Mass.

PRESS FORGINGS
MERRILL BROS.
5626 ARNOLD AVENUE
MASPETH, QUEENSBORO, N. Y.

CONTRACT MANUFACTURING

DROP FORGINGS
Special Forgings—High Quality. Fast Delivery. For prompt attention phone or send prints to John Bello.
CARCO INDUSTRIES, INC.
7341 Tulip Street, Phila. 35, Pa.
DEvonshire 2-1200

DROP FORGINGS
Special Forgings of Every Description. We solicit your prints or model for quotation.
Wilcox Forging Corporation
Mechanicsburg Penna.

Let us quote on STAMPINGS and ASSEMBLIES from drawing or sample
Drilling . . . Blanking . . . Riveting . . . Forming . . . Tapping . . . Welding . . . Toolmaking of course
COMPLETE DESIGN AND DEVELOPMENT FACILITIES
HUEBEL MFG. CO., INC.
763 Lexington Ave. Kenilworth, N. J.

Tool and Die Work
Tools-Dies-Jigs-Fixtures
Send your design or print for an estimate
The Pekin Corporation
301 Koch Street Pekin, Illinois

DROP FORGINGS
To Your Specifications
Prompt Quotations
BALDT ANCHOR CHAIN & FORGE DIVISION
P. O. Box 350—Chester, Pennsylvania

EQUIPMENT AND MATERIALS WANTED

Wanted To Purchase ROLLING MILL
5½ x 18 x 18, 2 high/4 high mill. Both work rolls and back-up rolls should be driven. Work rolls can be 5½" to 6" dia., work rolls and back-up rolls can be 16" to 20" wide. Motor-driven screwdowns desirable. Drive should be 100 hp. minimum, 440 volts. State make, age, location, price.
FANSTEEL METALLURGICAL CORPORATION
Geo. C. Conner, Purch. Dept.
North Chicago, Illinois

WANTED
TO PURCHASE ALL OR PART INTEREST IN STEEL FABRICATING PLANT.
Prefer With Facilities For Shearing, Slitting & Forming Material Around $200,000.00
ARNOLD HUGHES CO.
2765 Penobscot Bldg., Detroit 26 WO 1-1894

PLANTS WANTED
GET QUICK CASH FOR YOUR MACHINERY, EQUIPMENT, BUILDING & REAL ESTATE
Montgomery Engineering Co.
1796 W. Philadelphia Detroit 6, Mich. TRinity 4-0929

HIGH SPEED STEEL BARS
WANTED ALL TYPES ROUNDS AND FLATS MOLY AND TUNGSTEN
HIGH PRICE PAID FOR CLEAN MATERIAL ANY QUANTITY
JE-91660
Production Carbide & Steel Company
BOX D — VAN DYKE, MICH.

WANTED
SURPLUS STEEL
WALLACK BROTHERS
7400 S. Damen Ave. Chicago 36, Illinois

WANTED
BRIDGE CRANES
ARNOLD HUGHES COMPANY
2765 PENOBSCOT BLDG. DETROIT, MICH.
WOodward 1-1894

SELL US YOUR SURPLUS STEEL
HIGHEST PRICES PAID
MARION STEEL CO.
Michigan 2-1980
664 N. Michigan Ave., Chicago 11, Ill.

WANTED
NEW **SURPLUS STEEL** USED
Structurals, Plate, Pipe and Tubing
Consumers Steel & Supply Co.
P. O. Box 270, RACINE, WISCONSIN

WEISS STEEL CO. INC.
600 WEST JACKSON BLVD.
CHICAGO 6, ILLINOIS
Buyers of Surplus Steel Inventories
38 Years of Steel Service

EMPLOYMENT EXCHANGE

HELP WANTED

WANTED (ESTIMATOR)
Experienced in the Structural Steel & Iron Work Industry. An exceptional opportunity for a Qualified Man. Ideal working conditions with a well established organization in Southern Ohio.
ADDRESS BOX G-598
Care *The Iron Age*, Chestnut & 56th Sts., Phila. 39

WANTED ASSISTANT METALLURGIST
Commercial metal treating shop located in Chicago and operating on a 'round-the-clock' basis has immediate opening for graduate metallurgist or mechanical engineer as assistant to chief metallurgist and plant superintendent.
ADDRESS BOX G-601
Care *The Iron Age*, Chestnut & 56th Sts., Phila. 39

EMPLOYMENT EXCHANGE
The meeting place for employers and men qualified for positions in the metalworking industry.

REPRESENTATIVES WANTED

DISTRICT SALES REPRESENTATIVE WELDED STEEL TUBING
Opportunity for experienced steel tubing salesman in Chicago to represent a diversified welded tubing producer. Good knowledge of stainless tubing required. Salary and expenses. Replies held in strict confidence.
REPLY BOX NO. G-595
Care *The Iron Age*, Chestnut & 56th Sts., Phila. 39

SITUATION WANTED

PURCHASING AGENT SCRAP. Ten years practical and supervision experience in most phases of scrap industry. Buying, dismantling, preparing and selling of all types of iron and metals. Metallurgical background. Best references. 37 years old. Address Box G-599, Care *The Iron Age*, Chestnut & 56th Sts., Philadelphia 39.

PYRAMID TYPE PLATE BENDING ROLL

Capacity 1¼" X 12'

Our Line

Light and heavy machinery for all classes of sheet metal, plate and structural work.

BERTSCH & COMPANY, CAMBRIDGE CITY INDIANA

LOOKING . . .

FOR QUALIFIED METALWORKING PERSONNEL

The Employment Exchange of The IRON AGE is the meeting place for employers and over 185,000 qualified men in all phases of metalworking.

FOR DETAILS CALL OR WRITE The IRON AGE
Chestnut and 56th Streets, Philadelphia 39, Penna.

WILLIAMS-WHITE

Hydraulic Presses—Custom Built to Your Specifications

WILLIAMS-WHITE Hydraulic Presses represent the peak of up-to-date design and master craftsmanship. They are the result of 103 years of machinery building experience. This experience and our staff of engineers and designers are available to you without obligation. We invite you to discuss your requirements with us before you buy!

REPRESENTATIVES

CALIFORNIA, Los Angeles: George A. Davies Mach'y Co.
ILLINOIS, Chicago: WILLIAMS-WHITE & CO., 53 W. Jackson Blvd.
MICHIGAN, Detroit: E. E. Wood Mach'y Co.
OHIO, Cincinnati: Columbus or Dayton: Seifreat-Elstad Mach'y Co.
Cleveland: A. L. Bechtel & Son
OREGON, Portland: Allied Northwest Mach. Tool Corp.
PENNSYLVANIA, Pittsburgh: Frank Ryman's Sons
Wynnewood (Phila.): Edw. A. Lynch Mach'y Co.
WASHINGTON, Seattle: Perine Mach'y & Supply Co.
WISCONSIN, Milwaukee: Pagel Mach'y Co.

BUILDERS OF MACHINERY SINCE 1854

WILLIAMS-WHITE & Co.
302 EIGHTH ST. • MOLINE, ILLINOIS
PRESSES • BULLDOZERS • BENDERS • PUNCHES • SHEARS

"DAVIS" KEYSEATER

Low in Cost. Durable. Easy to operate.
Table adjustable for straight or taper keyways.
Three sizes. Keyways 1/16" up to 1".

DAVIS KEYSEATER CO.
400 Exchange St., Rochester 8, N. Y.

GOSS and DE LEEUW
MULTIPLE SPINDLE
CHUCKING MACHINES
Four, Five, Six, Eight Spindles • Work and Tool Rotating Type
GOSS & DE LEEUW MACHINE CO., KENSINGTON, CONN.

OCTOBER 24

Metal Show Issue

Another feature in our "HOW TO GET MORE FOR YOUR METAL-WORKING DOLLAR" series—HEAT TREATING

Plus . . . The IRON AGE Temperability Calculator—A simple, accurate means of determining tempering treatment for steels to obtain the desired hardness.

The **IRON AGE**

ARMSTRONG *Drop Forged* **EYE BOLTS**
Drop forged from the best mild steel, heat treated to increased tensile strength and proof-tested to 50% beyond rated "safe working load," ARMSTRONG Eye Bolts are strong, dependable and safe. Blank or threaded, "Plain or Shoulder" patterns. 15 standard sizes and special lengths. Write for Catalog.
ARMSTRONG BROS. TOOL CO.
"The Tool Holder People"
5209 ARMSTRONG AVE. CHICAGO 30, U. S. A.

ADVERTISERS

An asterisk beside the name of advertiser indicates that a booklet, or other information, is offered in the advertisement. Write to the manufacturer for your copies today.

A

Accurate Perforating Co. 137
*Acheson Colloids Co. 72
*Acme Steel Co. ..... 34 & 35
Ajax Electric Co., Inc. 4
Ajax Electrothermic Corp. 4
Ajax Engineering Corp. 4
*Alan Wood Steel Co. 142
*Allegheny Ludlum Steel Corp. 41
*Aluminum Co. of America ..... 88 & 89, 116
American Air Compressor Corp. 166
American Brass Co., The 83, 153
American Cast Iron Pipe Co., Special Products Division 18
*American Chemical Paint Co. 50
American Hoist & Derrick Co. 167
*American Monorail Co., The 133
Arcos Corp. ..... 118 & 119
*Armco Steel Corp. 6
Armel, James P. 168
*Armstrong Bros. Tool Co. 172

B

Babcock & Wilcox Co., The Refractories Division 31
Baldt Anchor, Chain & Forge Div. 170
Belyea Co. Inc. 165
Benkart Steel & Supply Co. 167
Bennett Machinery Co. 165
Bertsch & Company 171
Bethlehem Steel Co. 1, 174
Blaw-Knox Co. Foundry & Mill Machinery Division ..... Between Pages 112 & 113
*Bliss, E. W., Co. Rolling Mill Div. 47
Briggs & Turivas 168
Brill Equipment Co. 167
Brownell, Hazard, Machine Tools, Inc. 166
Browning, Victor R. & Co. Inc. 172

C

*Cambridge Wire Cloth Co. 123
Carco Industries, Inc. 170
*Chicago Rawhide Manufacturing Co. 90
Cincinnati Gear Company, The 108
Clearing Machine Corp. Div. U. S. Industries, Inc. ..... Between Pages 126 & 127
*Cleveland Punch & Shear Works Co., The ..... Between Pages 16 & 17
Cleveland Tramrail Division, The Cleveland Crane & Engineering Co. 40
Columbia-Geneva Steel Div., United States Steel Corp ..... Between Pages 16 & 17
Consolidated Railway Equipment Co. 168
Consumers Steel & Supply Company 170
*Continental-Diamond Fibre Subsidiary of The Budd Company 36
Continental Industrial Engineers Inc. 128
Continental Steel Corp. 109
*Copperweld Steel Co. Steel Div. ..... Inside Front Cover
Copperweld Steel Co., Ohio Seamless Tube Division 74
Cowles Tool Co. 85
Crawford, F. H. & Co., Inc. 165
Crucible Steel Co. of America ..... Between Pages 126 & 1[illegible]
Curry, Albert & Co., Inc. 166
Curtiss-Wright Corporation Industrial & Scientific Products Division 138
*Cutler-Hammer Inc. ..... Back Cover

D

*Dake Corporation 139
Davis Keyseater Co. 172
Detroit Steel Corp. 107
Donahue Steel Products Co. 165
Dony, D. E., Machinery Co. 167

E

Eastern Machinery Co., The 166
*Easton Car & Construction Co. 85
Edgewater Steel Co. 131
*Electric Controller & Mfg. Co. The Division of Square D Company 80
*Electric Furnace Co., The 122
Electric Steel Foundry Company 29
Erie Forge & Steel Corporation 38

F

Falk Machinery Co. 165
Fansteel Metallurgical Corp. 170
Federal Machine & Welder Co. 37
Fischer Special Mfg. Co. 86
*Formed Tubes Inc. 82
Foster, L. B. Company 168
Frank, M. K. 168
Fuller Company 28

G

Gem Clay Forming Co., The 169
Gemar Associates 167
*General Electric Co., Apparatus Dept. ..... 24 & 25
Globe Steel Abrasive Co. 132
Goodman Electric Machine Co. 167
Goodyear Tire & Rubber Co. Industrial Products Div. 10
Goss & DeLeeuw Machine Co. 172
*Great Lakes Steel Corp. 26 & 27
Greenberg, H. 169
*Greenlee Bros. & Co. 135
Griest Manufacturing Co., The 169

H

Hallden Machine Co., The 111
Hanna Furnace Corp., The 64
Hardinge Mfg. Co. 169
Henry, A. T. & Company, Inc. 165
*Horspool & Romine Manufacturing Co., Inc. 140
Houghton, E. F. & Co. 130
Huebel Mfg. Co., Inc. 170
Hughes, Arnold Co. ..... 168 & 170
*Hyatt Bearings Div. General Motors Corp. 47
Hyman, Joseph & Sons 167

I

*International Nickel Co., Inc., The 120
Iron & Steel Products, Inc. 164

J

Jessop Steel Company ..... Between Pages 48 & 49
Jones & Laughlin Steel Corporation 79

K

Kaplan, M. S., Company 151
Kaydon Engineering Corp., The 115

IN THIS ISSUE

Kennametal, Inc. Between Pages 48 & 4
*Keystone Steel & Wire Co. Between Pages 48 & 49
Kidde, Walter & Co., Inc. 145
*Kinnear Manufacturing Co., The 127

L

Lake Erie Engineering Corp. 32 & 33
*Landis Machine Co., Inc. 14 & 15
Lang Machinery Co., Inc. 167
Lansing Stamping Co. 141
Lurie Bros. & Co., Inc. 149

M

MacCabe, T. B. Co. 165 & 167
*Mallory-Sharon Titanium Corporation 48
*Manning, Maxwell & Moore, Inc. 8
Marion Steel Co. 170
Marshall Railway Equip. Corp. 168
Merrill Brothers 169
Miles Machinery Co. 166
Mississippi Valley Equipment Co. 168
*Monarch Machine Tool Co. 16
Montgomery Engineering Company 170
Morgan Construction Co. 5
*Mundt, Chas. & Sons 173

N

National Machinery Exchange 166
National Steel Corp. 26 & 27, 64
New England Pressed Steel Co. 169
New York Shipbuilding Corp. 169
*Niagara Blower Co. 141
*Nobur Mfg. Co. 173

O

O'Neil-Irwin Mfg. Co. 9
*Ohio Crankshaft Co., The 19
Ohio Seamless Tube Div. of Copperweld Steel Co. 74
Olson Manufacturing Co. 169
Ornitz Equipment Corp. 168

P

Papesch & Kolstad, Inc. 169
Pekin Corp., The 170
*Penn Metal Co., Inc. 30
*Perkins Machine & Gear Co. 121
*Portage Machine Co., The 84
Power Equipment Co. 167
Production Carbide & Steel Co. 170
Purdy Company, The 168

R

*R-S Furnace Co., Inc. 11
Rail & Industrial Equip. Co., Inc. 168
*Ready-Power Co., The 124
Reliance Electric & Engineering Co. 112
*Republic Steel Corp. 22 & 23
Roebling's John A. Sons Corp. Between Pages 16 & 17
Rosedale Foundry & Machine Co. 169
*Russell, Burdsall & Ward Bolt & Nut Co. 69
*Ruthman Machinery Co., The 140
Ryerson, Jos. T. & Son, Inc. Between Pages 48 & 49

S

*Salem-Brosius, Inc. 17
*Scott Paper Co. 39
Simonds Saw & Steel Co. 129
Smith Thomas Co. 169
*Smokatron Div. Summer & Co. 126
Socony Mobil Oil Co., Inc. 20 & 21
*Speed-D-Burr Corporation 137
*Sperry Products, Inc. 117
Square D Company E C & M Division 80
*Standard Pressed Steel Co. 46, 161
Standard Tube Sales Corp. 169
*Starrett, L. S., Co., The 61
Steel & Tube Div. The Timkin Roller Bearing Co. 66
Strom Machinery Corp. 167
Struthers Wells Corporation Titusville Forge Division 70
*Stupakoff Division of The Carborundum Co. 137
*Sun Oil Co. 76
Surface Combustion Corp. Steel Mill Division 44 & 45

T

Tennessee Coal & Iron Div. United States Steel Corp. Between Pages 16 & 17
Timken Roller Bearing Co., The Steel & Tube Division 66
Tippins Machinery Co. 167 & 168
Townsend Company, The 110
*Trabon Engineering Corp. Inside Back Cover
Tractor & Equipment Co. 169
Treadwell Engineering Co. 63

U

United Metals Refining Co. 168
*United States Steel Corp. Between Pages 16 & 17
United States Steel Export Co. Between Pages 16 & 17
United States Steel Supply Div. United States Steel Corp. Between Pages 16 & 17
Universal Machinery & Equipment Co. 167

V

Valley Mould & Iron Corp. 163

W

Wallack Bros. 170
Wallingford Steel Co., The 13
Ward Steel Co. 141
Wean Engineering Co., Inc., The 87
Weatherly Foundry & Mfg. Co. 169
Weiss Steel Co. Inc. 170
Westinghouse Electric Corp. Between Pages 16 & 17
Wheland Co., The 12
Wigglesworth Industrial Corp. 167
Wilcox Forging Corp. 170
Williams-White & Co. 171

Y

Youngstown Sheet & Tube Co., The 125
Youngstown Welding & Engineering Co. 43

CLASSIFIED SECTION

Clearing House 164-169
Contract Manufacturing 169 & 170
Employment Exchange 170
Equipment & Materials Wanted 170

NEW!

NOBURMATIC "H"

A Positive Action, Completely Automatic Tool for DEBURRING and CHAMFERING of FRONT and BACK SIDES of HOLES from a Single Entry!!

Designed for mechanized or automated machine tools but equally adaptable to manual usage in conventional drill presses.

Write for Complete Details!!

NOBUR MFG. CO.

6860 Farmdale Ave., No. Hollywood, Calif.

MUNDT

PERFORATED METALS

The few perforations illustrated are indicative of the wide variety of our line—we can *perforate almost any size perforation in any kind of metal or material required.* Send us your specifications.

Sixty-seven years of manufacturing perforated metals for every conceivable purpose assure satisfaction.

Write for New Catalog of Patterns

TIN, STEEL, COPPER, ALUMINUM, BRONZE BRASS, ZINC, ANY METAL, ANY PURPOSE

CHARLES MUNDT & SONS

50 FAIRMOUNT AVE. JERSEY CITY, N. J.

Truckload of bricks bundled in lots of 100 with strapping made by Signode Steel Strapping Co., Chicago, Ill.

Look what's happened to the hod-carrier!

A few cents' worth of steel strapping enables this fellow to wheel 100 bricks at a time around the job-site, where his predecessor carried only ten!

Yes, they work a lot of magic these days with that familiar packaging standby, steel strapping. Cargo handlers secure lading with it, warehousers bind pallet-ends with it, builders tie up forms for concrete columns with it. There appears no limit to the promotional imagination of steel strapping manufacturers.

The raw material for most steel strapping is hot-rolled coiled sheets. Steel-strapping manufacturers look to Bethlehem for a healthy mileage of this raw material. Strapping is one of the many uses of sheet steel which have grown into important consumers of Bethlehem sheets during recent years. Combine the many relatively new and fast-growing sheet uses with the longer-established ones, and you can understand why Bethlehem is being called on to turn out steel sheets in larger volume than ever before. We would be glad to discuss your sheet steel requirements with you.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. *Export Distributor:* Bethlehem Steel Export Corporation

BETHLEHEM SHEETS

BETHLEHEM STEEL

TRABON
CENTRALIZED LUBRICATION

Roughest-toughest lubricating job in the world...

and why Trabon gets 60% of all this business

Nothing in lubrication history can match the murderous punishment dished out by a blast furnace top. Smoke, gas, ashes, rain, snow, ice and infernal heat – all these are the normal, daily obstacles that face an automatic lubricating system protecting the blast furnace tops of the nation!

And what automatic centralized lubricating system is the first choice of The "Big 6" steel producers for this crucial lubricating job? Trabon, by an overwhelming majority of installations!

Here are the facts! Of the 146 blast furnaces with centralized lubrication operated by the "Big 6" steel producers, 88 (60%) are protected by Trabon. Other steel producers boost the total of Trabon-equipped blast furnaces to over 100 not including many more Canadian installations.

Among Trabon-equipped blast furnaces is "Hazel" of the Fairless Works, U. S. Steel Corporation. "Hazel" recently set a monthly production record of 62,370 tons. Close-up shows Trabon feeders and lubricant lines which deliver the proper amount of lubricant to a typical blast furnace top.

Trabon automatically delivers a measured amount of lubricant to revolving distributors, skip sheaves, bell beams and sheaves and to other points where proper lubrication assures trouble-free operation. No bearings are ever missed. Trabon saves labor, lubricant, increases production time and eliminates the hazards of having a man with a grease gun climbing around dangerous areas.

Remember—a system that can keep a blast furnace properly lubricated can do the same for any equipment, under any conditions. Write for technical details today!

Trabon

Trabon Engineering Corporation

28815 Aurora Road • Solon, Ohio

Centralized OIL AND GREASE SYSTEMS Flood CIRCULATING OIL SYSTEMS

Industry's Preferred Motor Control

In all Standard Enclosures

A nationwide network of Authorized Cutler-Hammer Distributors offers prompt supply of Cutler-Hammer Three-Star Motor Control in all generally used sizes, constructions and enclosures. Also all needed control accessories and matching safety switches.

In Special Construction

Machinery builders have been quick to recognize the many advantages offered by Cutler-Hammer Three-Star Motor Control components, including the spectacular new heavy-duty oil-tight pushbuttons.

In the Finest Control Center

The new Cutler-Hammer Three-Star Unitrol provides for the quickest installation or rearrangement of the finest in motor control equipment, cost-saving Cutler-Hammer Three-Star Motor Control.

All motor control is built to high standards; functional importance requires it. But the comparison of several makes in *actual use* proves there can be wide differences!

One make of control, for example, is much easier to install, so *much* faster that the man-hours saved in installing it often more than pay the entire cost of this control . . . Cutler-Hammer Three-Star Motor Control! Comparison in use also proves this control works better, makes electric motors work harder, avoids costly work interruptions. Cutler-Hammer Three-Star Motor Control in industry's "killer" jobs has shown a trouble-free operating life *several times* that of whatever control equipment it replaced.

The Panel Builder's Handbook, a comprehensive data book on Cutler-Hammer Three-Star Motor Control components and accessories is offered free of charge to machine design and control panel engineers. Write today on your company letterhead for Pub. EE-120.

CUTLER-HAMMER
★ ★ ★
MOTOR CONTROL
C-H

Discover why this is industry's preferred motor control. Compare it in *use* and see why you should also specify it as your standard. , , , CUTLER-HAMMER, Inc., 1325 St. Paul Avenue, Milwaukee 1, Wisconsin. *Associate:* Canadian Cutler-Hammer, Ltd., Toronto.